

## **REPORT**

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Title: Geochronological databas	e of magmat	ic events in Norway	and rela	ited areas: upd	ate 2012	
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Summary: This report provides an recording magmatic even Precambrian basement of	ents in the	Scandinavian Cal	edonio	les, in the S	veconor	wegides and in the
Keywords: U-Pb		ziro	on			magmatism

This report provides an updated compilation of published U-Pb geochronological data recording magmatic events in the Scandinavian Caledonides, in the Sveconorwegides and in the Precambrian basement of Finnmark inside Norway. The compilation is presented as an XL sheet with georeferencing, updating the table in the data repositories of Bingen and Solli (2009) and Bingen et al. (2011). The objectives of the compilation are: (1) facilitate access to available geochronological literature, (2) picture the distribution of magmatism along the western margin of Baltica, (3) support interpretation of detrital zircon provenance studies in North Atlantic regions, and (4) provide a ready to use tool for mapping.

The compilation includes some 850 selected samples of (meta)plutonic and (meta)volcanic rocks. The compilation considers data collected with the U-Pb dating method, mainly on zircon. Data on large magmatic bodies were selected as well as data on small bodies (dykes, sills, pegmatites) and leucosomes recording enough magma segregation to be sampled separately. Literature sources include journal articles published up to 2012 or in press, geological survey reports, and a few PhD theses forming part of the commonly cited literature (e.g. Berglund 1997). A few classical abstracts, the content of which has been presented during field excursions or is reported on geological maps are compiled too (e.g. Dahlgren et al. 1990; Handke et al. 1995; Zwaan & Tucker 1996). Some pioneering studies were ignored or only partially listed, if the data are superseded or considered unreliable following today's standard (discordant zircon analyses, few analyses/ sample, alternative interpretations possible; e.g. O'Nions & Baadsgaard 1971). A few robust Re-Os, Lu-Hf and Sm-Nd geochronological data are also listed for completeness. Rb-Sr data are not listed.

Localisation of the easternmost reach of Sveconorwegian deformation is a matter of discussion. Consequently, all samples located along a broad zone corresponding to the Sveconorwegian Frontal Deformation Zone (SFDS, north of lake Vättern) and Protogine Zone (PZ, south of lake Vättern) were compiled together with samples located west of these structures. For completeness, samples of the Sveconorwegian-aged Blekinge-Dalarna Dolerites, located east of the Sveconorwegian orogen, are also listed, as well as samples of Mesoproterozoic magmatism attributed to the Danopolonian event (ca. 1500-1400 Ma; Bogdanova et al., 2008) in Southern Sweden and Bornholm. For the Caledonian belt, the Caledonian Front is unambiguously defined. The Barents Sea Region is compiled as part of the Finnmark basement.

The table includes for each entry the accepted or most reasonable tectonostratigraphic unit hosting the dated rock, a short characterization of the lithology and locality, some key data descriptors (mineral analysed, best age selection method, analytical method), the sample coordinates, and the reference. In Sweden, the coordinates are listed in the Swedish National grid (RT90), if reported in this way by the authors. Otherwise they are listed, converted or estimated in the UTM(WGS84) projection. All coordinates are converted in latitude-longitude (decimal degrees). The precision of the coordinates is described by three qualifiers: GPS: better than 10 m as provided by GPS reading, Map: typically ca. 100-200 m from reading a 1:50000 map or aerial photograph; ca.: approximate location as deduced from a description or a sketchmap. Literature sources are listed at the bottom of the table.

This updated compilation can be quoted conveniently as "updated from Bingen and Solli, 2009".

## References

Bingen, B., and Solli, A., 2009, Geochronology of magmatism in the Caledonian and Sveconorwegian belts of Baltica: synopsis for detrital zircon provenance studies: Norwegian Journal of Geology, v. 89, p. 267-290.

Bingen, B., Belousova, E.A., and Griffin, W.L., 2011, Neoproterozoic recycling of the Sveconorwegian orogenic belt: detrital-zircon data from the Sparagmite basins in the Scandinavian Caledonides Precambrian Research, v. 189, p. 347-367.

Berglund, J., 1997, Mid-Proterozoic evolution in south-western Sweden: Göteborg, Ph.D. thesis, Publication A15, Department of Geology, Earth Science Centre, Göteborg University.

Bogdanova, S., Bingen, B., Gorbatschev, R., Kheraskova, T., Kozlov, V., Puchkov, V., and Volozh, Y., 2008, The East European Craton (Baltica) before and during the assembly of Rodinia: Precambrian Research, v. 160, p. 23-45.

Dahlgren, S., Heaman, L.M., and Krogh, T., 1990, Abstract. Precise U-Pb zircon and baddeleyite age of the Hesjåbutind gabbro, central Telemark area, Southern Norway: Geonytt, v. 17, p. 38.

Handke, M.J., Tucker, R.D., and Robinson, P., 1995, Abstract. Contrasting U-Pb ages for the Risberget augen gneiss in the Norwegian Caledonides: getting to the root of the problem: Geological Society of America Abstracts with Programs, v. 27, p. A226.

O'Nions, R.K., and Baadsgaard, H., 1971, A radiometric study of polymetamorphism in the Bamble region, Norway: Contributions to Mineralogy and Petrology, v. 34, p. 1-21.

Zwaan, K.B., and Tucker, R.D., 1996, Abstract. Absolute and relative age relationships in the Precambrian West Troms Basement Complex, northern Norway, 22nd Nordic Geological Winter Meeting: Åbo, Finland.

## **APPENDIX**

Table in XL format

Table. Selection of U-Pb, Re-Os, Lu-Hf and Sm-Nd geochronological data recording magnatic events in the Sveconorwegian and Caledonian orogens of Norway and Sweden, in the Proterozoic basement of Finnmark, Norway, and in some areas of Fennoscandia.

			,													
Megaunit 1	Megaunit 2	Definition	Sample Id	Mineral	System Method		type	Age	±2σ	2σ Reference		Land UT	Land UTM (32-36) / RT90 (S)		Lat/Long	Position
Entry	)		-		,		;					Z	. О	-	)	+1
(1)	(1)			(2)			(3)	[Ma]				2	(4) [m]		[degrees]	(2)
Caledonian and Sveconorwegian orogens	orogens															
		Siljan-Hvarnes complex, Østvann syenite	81006	Zrn	O-Pb	TIMS 20	206/238		0.8	.8 Pedersen	et al., 1995	Z			9.835467 59.2	86024 ca.
2 Oslo Rift		Siljan-Hvarnes complex, Vierød syenite	79887	Zrn	e			278.4	8.0+	.8 Pedersen et al.,	et al., 1995	e e	32 552400	6576100		59.320474 ca.
3 OSIO KIII		Siljan-Hvarnes complex, Odberg Jarvikite Siljan-Hvarnes complex, Siljan pordmarkite	79885	LUZ Zun	2 4		•	0 .				2 2			9.909994 59.2	59.250499 ca.
5 Oslo Rift		Skrim-Mykle complex, Mykle ekerite	58858	Zrn	- P				+0.7	0.7 Pedersen et al	et al., 1995	. ×				
		Skrim-Mykle complex, Skrim larvikite a	75967	Zrn	U-Pb	TIMS 20					et al., 1995	N N				
		Skrim-Mykle complex, Skrim larvikite b	75954	Zrn	٠. ا - ا		206/238 2				et al., 1995	z:				
8 Oslo Rift		Larvik plutonic complex, lardalite pluton 9		L Z	2 2 3 5	IIMS	~ 0	292.1			Dahlgren et al., 1996	~ ·	2 55/000		9.995399 59.1	
_		Laivik piutoriit comprex, quartz-bearing laivikite piutori z Skien basalts Taminated mallititic tuff Kierringssen Dossering	C CO5.1	ZIII	2 6				#:-# +0 +		Danglen et al., 1996 Corfii & Dablaran 2008	2 2		6565000		59.216669 cd.
		Brunlanes basalts, ionimbrite, Skaryholmen, Brunlanes	D. C01-4	£ £	5 E						Corfu & Dahlgren, 2008	2 2				
12 Oslo Rift		Brunlanes basalts, volcanoclastic ultramafic rock, Brunlanes	A, C01-120	P.	-P -P		3D-iso				Corfu & Dahlgren, 2008	. ×		6536828		
13 Oslo Rift		Brunlanes basalts, olivine mellilitite flow, Brunlanes	B, C01-121	Prv	U-Pb					0.7 Corfu & D	Corfu & Dahlgren, 2008	N N		6536828		
14 Uppermost Allochthon	Helgeland Nappes	Upper Nappe, deformed porphyritic granite, Abygda, E of Terråk	N03.06	Zrn	u-Pb					0	al., 2007	ω N	33 385393	7216115	_	55.048917 GPS
	Helgeland Nappes	Upper Nappe, Tosen, late stage biotite monzogranite	TF-81	Zrn	U-Po		206/238 4		±5.6		al., 2011					
	Beiarn Nappes	Gråtådal-Sokumfjellet unit, Tverrvika pegmatitic granite, granite	LEA08-27	Zrn	ا - <u>۵</u>					7	Augland et al., 2012		3 479212		14.522250 67.0	67.050270 GPS
	Helgeland Nappes	Upper Nappe, Lifjell granite pluton, porphyritic granodiorite	GBM.NL.9922	Zrn, Ttn	G :					ω,	2002			7332650		
	Helgeland Nappes	Upper Nappe, Namdal, foliated tonalite pluton, tonalite	L184	Zrn	6 - :		conc		±2	2 Nissen et al., 2006	al., 2006					
	Belarn Nappes	Gratadal-Sokumijelilet unit, Tverrvika quartz diorite, quartz diorite	LEAU8-25	Z	2 2						Augiand et al., 2012			7457064	-	57.050270 GPS
	Nipago Nappo	Oracadal-Sokumijellet umit, marvoid granite, equigranuial granite dyke Dogmatitic trondbjomite cili boudhagod. Gratango flord	NOD81 CE1	Mnz	2 6	•				_	Augiand et al., 2012 Stottomobil et al., 2003		3 584142	7453721	14.633290 67.1	
22 Uppermost Allochthon	Holosland Nappe	Treginatitic trottalijemite siii boudinageu, orakaligen ijoru Haner Nanno, Namdal, fino grainod granodiorite sheet	11204	Zrb	2 6				7 + 7		II et al., 2003 al 2006				•	
	Helgeland Nappes	Upper Nappe monzodiorite in Toshoth monzodiorite	N87-03	Zru	2 6		in in	430	+7	7 Nordonler	Nordailen et al. 1993					
	Helgeland Nappes	Sklinna island. Sklinna granite pluton, biotite granite	95.08V	Zrn	- A				+4.1		al., 2007				_	
25 Uppermost Allochthon	Beiarn Nappes	Stabbursdal unit, Tollådalen gabbro, equigranular gabbro	LEA08-28	Zrn	O-P		conc* 4	430.5		.1 Augland e	Augland et al., 2012	. z	33 492506	7419492	_	56.893270 GPS
	Helgeland Nappes	Middle Nappe, boudinaged leucogabbro dyke, Markavatnet, Storvika	NLV-19A	Zrn	U-Pb		•		3.6	.6 Barnes et	al., 2007				_	
	Heggmo nappe (terrane)	Unfoliated granitic pegmatite	AA 09-10	Zrn	U-Pb		•		±1.0	.0 Agyei-Dv	Agyei-Dwarko et al., 2012				-	
28 Uppermost Allochthon	Beiarn Nappes	Gråtådal-Sokumfjellet unit, Harefjellet diorite, equigranular diorite	LEA08-22	Zrn	U-Pb		•				Augland et al., 2012			7423895	-	
	Helgeland Nappes	Upper Nappe, Tosen, tonalitic dyke (15m wide)	TF-82	Zrn	U-Pb		•			2	al., 2011			7239500	_	55.262550 Map
30 Uppermost Allochthon	Beiarn Nappes	Gråtådal-Sokumfjellet unit, Marvold diorite, equigranular diorite		Zrn	U-Pb		•			_	t al., 2012			7453721	_	
	Beiarn Nappes	Gråtådal-Sokumfjellet unit, Harefjellet foliated granite, mylonitic granite	EA09-16	Zrn	U-Pb		•			6.	t al., 2012					
	Beiarn Nappes	Høgtind granite, cut Govddestind unit, porphyritic granite	LEA09-9	Zrn	۵ ا - ۵		•		0.5	n,	t al., 2012					67.007900 GPS
33 Uppermost Allochthon	Helgeland Nappes	Upper Nappe, Kaivvatnet quartz monzonite	N488	UJ Z	2 d				01.7	10 Noraguler	et al., 1993				12.999584 65.1	
	Heigeland Nappes	Upper Nappe, Toose, net-veined monzonitic dyke	N16.05	uu7	2 5		206/238 4		3.5	.5 Barnes et	Barnes et al., 2011		33 397500	7239500	_	55.262550 Map
25 Uppermost Allochthon	Heigeland Names	Upper Nappe, Tosett, Tollateu bartueu diorite intrudeu by leucogramme	Non 41	72.0	2 4				t t t	4 barries et	dl., ∠UII otolii	2 2				
	Helgeland Nappes	Opper Nappe, granoulous west of basyassiferer, granoulous	-0-40N	Zrn	2 6	TIME 2			, H.		Notagalettet al., 1993	2 2	3 41 1800	7088700	8 808048 63 0	
	Heldeland Nappes	Jower Name Heilhornet nitton grandiorite	NO8 OA	Zru	2 6				10 8 6+	.9 Rarnes et al. 2007	al., 2004	2 2				55.72332 ca.
	Helpeland Nappes	Middle Name: bourdinaged gabbroic dyke. Storylka area	NI V-17B	Zru	5 E		206/238 4		2.4	.4 Barnes et al., 2007	al., 2007	2 2		·		
	Helgeland Nappes	Middle Nappe, Krakfiellet tonalite-granodiorite pluton	N88-3	Zrn	-P				+7	7 Nordquler	et al., 1993	Z			_	
	Helgeland Nappes	Granite, West Vikna-Kalvøva, deformed two mica granite	04.07V	Zrn	-P		·		5.9	.9 Barnes et	al., 2007	Z	32 586137		10.824740 64.9	54.969631 GPS
42 Uppermost Allochthon	Helgeland Nappes	Heilhornet monzogranite pluton, Bursvikbotn, granite	86-98N	Zrn	U-Pb		up.int		+11	1 Nordguler	Nordgulen & Schouenborg, 1990	z	3 366800		~	
43 Uppermost Allochthon	Helgeland Nappes	Andalshatten granodiorite pluton, Bursvikbotn, granite	N87-02	Zrn	u-Pb				+11	1 Nordguler	et al., 1993	ω N	33 378750		~	_
	Helgeland Nappes	Sausfjellet diorite pluton	NZ191	Zrn	U-Pb	TIMS L	np.int	445	+11	1 Yoshinobu	Yoshinobu et al., 2002	N N		7245063	~	
45 Uppermost Allochthon	Helgeland Nappes	Hillstadfjellet diorite pluton	NZ291	Zrn	U-Pb				±3.2	.2 Yoshinobu	Yoshinobu et al., 2002	ω Z	33 385544	7260393	-	
	Helgeland Nappes	Peraluminous granite-diatexite, contact Asket-Drevli pluton	N1991	Zrn	U-Po		`		3.7	.7 Yoshinobu	Yoshinobu et al., 2002	z Z			_	
	Helgeland Nappes	Asket-Drevli diorite pluton	NZ391	Zrn	U-Po		~		2.3	.3 Yoshinobu	Yoshinobu et al., 2002	z	33 385324		12.531092 65.3	
	Helgeland Nappes	Upper Nappe, Tosen, small pluton quartz diorite-quartz monzodiorite	TF404	Zrn	ا ا		-			.7 Barnes et al., 2011	al., 2011	z:				65.264390 Map
	Helgeland Nappes	Troholmen granite pluton, granitic gneiss, Rødøy	KR-21	Zrn	٠ 		206/238 4	149.2	+3.5	n o	al., 2007	e :	3 386507	7300295		03898 GPS
50 Oppermost Allochthon	Nakkedal Nappe	Skattera migmattle complex, metagabblo, Lumeim Skattera migmattle complex, anotherite dyke Tunbeim	7.1 T.1	E #	2 6		•		0 0	S Selbekke	Selbekk et al., 2000	2 2				59.673882 Map
	Heldeland Nappes	Swarthonen nluton quartz monzonitic queiss in hybrid zone	NO3 OF	Zrn	2 6				2.7		al., 2007	2 2	3 381435			
	Helgeland Nappes	Hortavaer infrusive complex, pegmatitic monzodiorite	02.12H	Zrn	- H	ICPMS 2C	~		2.2		al., 2007	2			_	
	Helgeland Nappes	Vega granite pluton, Vega	N00-07	Zrn	U-Pb		~		3.2	-	Yoshinobu et al., 2002	z			_	
55 Uppermost Allochthon	Lyngsfjell Nappe	Lyngen magmatic complex, Kjosen unit, metatonalite layer	NO41	Zrn	U-Pb				±5	5 Oliver & K	Oliver & Krogh, 1995	N N				
	Leknes Group	Metatonalite pod in schist, Horn	C01-81	Zrn	U-Pb				+3		4b	N N				
	Helgeland Nappes	Peraluminous "Tourmaline" granite, Velfjord, two-mica granite	N87-07	Zrn	U-Pb		7				Yoshinobu et al., 2002	e Z	3 381970	7262740		65651 Map
	Helgeland Nappes	Tonalitic, migmatitic dyke in aureole of Vega pluton	NWV-6	Zrn	U-Pb		`				al., 2007	e Z			-	
	Helgeland Nappes	Vega granite pluton, Vega	VGWM-15A	Zrn	U-Pb	ICPMS 20	206/238 4	175.1		3.8 Barnes et al., 2007	al., 2007	e Z	-	7278699	-	55.601977 GPS
60 Uppermost Allochthon	Helgeland Nappes	Ylvingen granite pluton, biotite granite	VCF05.06	Zrn	۵ ا - ۵		`		+1.5		al., 2007	z:		7280756	_	
	Helgeland Nappes	Vega granite pluton, Vega	N00-07	UJ Z	2 d		_		5+3	3 Yoshinobu	Yoshinobu et al., 2002	2 2		725 6300	0.26302	55.669455 Map
	Helgeland Nappes	Peraluminous granite-diatexite, contact Hillstadrjellet pluton	N8/-06	u 7	2 - - -		~		5.4	.3 Yoshinobu	et al., 2002	უ ( z :		725,000	_	
63 Uppermost Allocation	Heigeland Nappes	Leucosome in semipelitic migmatite, Hortavær	05.02H	uu7	2 5	ICPMS 20	206/238 4	/./ #	1.7.	.1 Barnes et al., 2007	al., 2007	2 2			11.350770 65.2	55.237320 GPS
	Diopos Namo	Discoult forallise angier has Ofster Name Complex	04:01H	72.0	2 4		•		4.7.	.4 barries et al., 2 1 Northrup 1997	al., 2007	2 2	2 611/11/			55.16669U GPS
65 Uppermost Allochthon	Everies Nappe Helgeland Nappes	Ruggevin totialite griess, base Orotei Nappe complex Rotnafiellet anatectic granite. Bursvikhotn	N250-13	Zrn	2 4				. T O	0 Rarnes et al 2007	1,77/ al 2007	2 2		7224945	12 136133 65.1	56.771932 ca.
	Heldeland Nappes	Upper Nappe Tosen melanosome of stromatic migmatite dating melting		Zrn	2 4		_		. 0	9 Barnes et al. 2011	al. 2011	2 2	3 397500		_	55.26250 Man
	Helgeland Nappes	Upper Nappe, Tosen, diatexite migmatite dating partial melting	TF104	Zrn	- P - D		206/238 4	180.6	+3.8	.8 Barnes et al., 2011	al., 2011	. z	33 397500			
69 Uppermost Allochthon	Rødingsfjell Nappes	Microcline gneiss, host to Bleikvassli sulphide deposit	94022	Zrn	U-Pb	TIMS			±2	2 Larsen et al., 1995	al., 1995	N N	3 449180		13.883520 65.9	65.924980 Map
70 Uppermost Allochthon	Tromsø Nappe	Trondhjemite orthogneiss layer in eclogite, Tromsdalstind	C01-97	Zrn	U-Pb			_	5/-2	_	., 2003b	e Z				

630400 7224700 492376 747151 414623 7860722 594955 6927847 554860 6942700 551413 696078 554800 6942100 549600 6953700 519940 6893188 519940 6893188 549600 6953700 414623 786072	563600         7884100         16.454717         68.326299           564200         7844400         16.56407         68.36229           562200         746100         16.56407         68.36224           562400         746100         16.56407         68.35224           562400         746100         16.56407         68.35224           56240         7881200         16.689057         68.33202           415466         7867750         24.68910         70.08516           596538         7874490         25.47010         70.06783           414323         7874490         25.47010         70.06783           41546         7865926         24.68910         70.06783           4144423         784930         23.254467         70.734300           4444444         7889995         25.51740         70.734300           464710         7882465         23.254467         70.734300           46711         785460         70.70410         46.3700           786412         785346         23.34560         70.70410           463709         787482         25.931847         70.91420           463709         786482         25.931847         70.91420	7176900 13.895079 64.684397 7050100 86.6541 63.728546 706.000 86.6541 63.728546 706.000 9.589241 63.728546 705.500 9.5392499 13.72818 705.500 9.539249 13.72818 705.500 10.810103 63.97819 705.500 10.810103 63.97819 705.500 10.810103 63.97819 705.500 15.040544 66.03239 705.500 15.040544 66.03239 705.500 15.040544 66.03239 715.700 13.040543 64.40005 715.700 13.04512 64.616749 709.740 11.117472 63.988021 716.700 13.04512 64.616749 709.740 11.117472 63.988021 716.700 13.04512 64.616749 709.740 11.117472 63.988021 716.700 13.04512 64.616749 709.740 11.117472 63.988021 716.700 13.04512 64.616749 709.740 11.117472 63.988021 716.700 13.04512 64.616749 709.740 13.74750 13.7652 7176.000 64.41607 705.500 5.19820 59.14420 705.600 5.177705 63.805944 668000 5.277470 59.207430 705.500 9.337569 63.533496	32 303200 6676600 5.451414 6.0178675 ca. 3.303200 6676600 5.451414 6.0178675 ca. 3.303200 6676600 5.451414 6.0178675 ca. 3.216100 7195360 13.332490 64.873031 ca. 3.216100 7195360 13.332490 64.873031 ca. 3.216100 68887000 5.154097 8.3230300 ca. 3.216400 67.873030 ca. 3.216400 67.4000 5.217490 Map 32 264200 6774400 5.227695 60.155527 ca. 5. 1435300 7278900 14.426947 65.124499 Map 32 283400 6886700 5.215787 59.354177 ca. 3.226490 6886500 5.15787 59.354177 ca. 3.226500 674600 5.215787 59.354177 ca. 3.226500 6886500 5.15787 59.354177 ca. 3.226500 6886500 5.15787 59.354177 ca. 3.226600 774660 11.042315 63.78449 Map 34 513607 768900 21.34750 69.280000 Map 34 513500 768500 21.34750 69.280000 Map 34 513500 77897100 21.55890 69.275609 0.3
2 Dunning & Pedersen, 1988 N 10 Agyei-Dwarko et al., 2012 N 10 Corfu et al., 2011 N 4 Nilsen et al., 2007 N 3 Dunning & Grenne, 2000 N 4 Nilsen et al., 2007 N 6 Nilsen et al., 2003 N 15 Corfu et al., 2006 N 05 Nilsen et al., 2006 N 05 Nilsen et al., 2007 N 05 Nilsen et al., 2007 N 07 Nilsen et al., 2007 N 08 Nilsen et al., 2007 N 11 Corfu et al., 2007 N 12 Nilsen et al., 2007 N 13 Nilsen et al., 2007 N 14 Corfu et al., 2007 N 15 Corfu et al., 2007 N 16 Corfu et al., 2007 N 17 Corfu et al., 2007 N 18 Corfu et al., 2007 N 19 Corfu et al., 2008 N 10 Corfu et al., 2008 N 11 Corfu et al., 2008 N	0.4 Norfrup, 1997  1 Norfrup, 1997  2 Pederser et al., 1991  2 Tucker et al., 1997  5.1 Kirkland et al., 2005  1.3 Milsen et al., 2005  N Milsen et al., 2007  N Kirkland et al., 2005  N Milsen et al., 2007  N Kirkland et al., 2007  S.1 Kirkland et al., 2007  N Kirkland et al., 2007  N Kirkland et al., 2007  N Kirkland et al., 2007  O'Crift et al., 2007  N Corfu et al., 2007		6 Dunning & Pedersen, 1988 N N Stephens et al., 1993 N N Cheers et al., 1993 N Stephens et al., 1993 N Stephens et al., 1993 S Dunning & Pedersen, 1988 N S Gronefac & Roberts, 2010 N Stephens et al., 1993 S Gronefac & Roberts, 2010 N Stephens et al., 1993 S 1 Classoon et al., 1998 N S Classoon et al., 1998 N S Dunning & Pedersen, 1988 N Dunning & Pedersen, 1988 N N S Roberts & Tucker, 1998 N N S Roberts & Tucker, 1999 N N S Roberts & Tucker, 1999 N N S Roberts & Tucker, 1999 N N S Roberts & Siglia, 2001 F F S N S Roberts & Siglia, 2001 F F S Roberts & Siglia, 2001 F F S Roberts et al., 1989 N N N S Roberts & Siglia, 2001 F F Roberts &
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				Sandøra granitic gneiss, Skjervøy Snøfjord leucosome in Eidvågeid paragneiss	Early pegmatite within Klubben psammite Litlefjord pegmatite	Revsneshamn pegmatite Grantitc diklet near Lillefford bluton		Eurerjon grante, z samples Eigegayantet folladed grantle, in Eighagaid paragneiss Mordagos fellated grantle, in Eighagaid paragneiss	Nordneser rollated grantle, in Eldvägeld paragneiss Lillefjord grantitc gneiss	Aagerøy	Sledgoalvi granite Harvika granite Harvikneset	ppe Reported granite	Late-scandian pegmatte, Gagnasvatn (?) Pegmattte dyke deformed, Sørfjorden		Granitic dyke folded, Årbogen, Foldfjorden Granodioritic dyke, Fossila	Early-Scandian pegmatite, Trāsāvika	For interior dyke swarm dignte pods, Favorithallen	Vistas Grante, Represaise Mis Nuclenjuone granite gneiss, W Saxnäs	Felsic dyke, Safek Ruovddeváre syenite		0,	Granite dyke, upper thrust sheet 5 Phenocryst meissic granite, upper thrust sheet 5	Mylonitic granite, thrust sheet 5, NW of Ritsem	Granite dyke cuting granite-diones, lower infust sheet o Granite, close to lake Teusajaure	Granite, granite-diorite mingling, lower thrust sheet 6 Mylonitic diorite, thrust sheet 5	Mylonitic granite, thrust sheet 6, NW of Stora-Sjofallet Trondhiamila duke Fonnes may	lappes Ardal leucocratic dike complex, granite dyke, Kaupanger	Pegmatite dyke, Hakjerringa, Kongevær Leucosome in amphibolitized 2-pyroxene-garnet granulite, Djupevik		Zoned granitic pegmatite, Hurrungane	dappes Allanne-Deaning peginatine byke, muri ungame Jotunite-mangerite pluton Radøy, mafic granulite		lappes Massif anorthosite, Gudvangen quarry		Anorthosite, W of Otnes, W of lake Lomnessjøen		Risberget Nappe Augen gneiss, Kjöra, Ranningen Risberget Nappe Augen aneiss. Brattvåg. Veraholmen	Augen greiss, road to Otnes, W of lake Lomnessjøen		Quartz monzonitic gneiss, Rambera

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Leirungsmyran gabbrolc complex, pegmatite pod Pegmatitic gabbro, Stordalsvatn Alkali feldspar granite, Ormljeernkampen	Svarthumlevatnet metagrabbro, sheared pegmatitic leucocratic vein Granitic gneiss, Rostein, road to Horgen	Mylonitic augen gneiss, Åkrestrømmen, E of Lake Storsjøen, Valsjøberge	Augen gneiss, Koppang	Anatectic granitic gneiss, Galbergstjernet Charnocktic two pyrovoga granulite. Hurringane	Monzonite, Altay	Augen gneiss, 5 ilmb or helleneset Synform, brattvag Jotunite gneiss, Fannaråken	Quartz monzonite, Tyin	Augen gneiss, weakly deformed megacrystic granodiorite Syenitic to monzonitic gneiss, Tyin	Felsic porphyry-rhyolite, Ritsem	Porphyritic quartz syenite, 5 of Dikanas, Morrosjobacken Granite, Høgåsen, transported(?) Tufsingdal window (basement Moelv F	Granite, Atndalen, transported(?) Atnasjøen window	Diorite, River Mistra near Akrestrømmen Monzonite, E of Femunden, Litlesiøberaet (basement Rendalen Fm)	Discordant pegmatite, Træna	Discordant pegmatite, Sjona  Pogmatite, ca, 50 m in digrite, Moskonasov, Diunflord bridge	Børgefjell metadolerite	Granite, Sjangell	Plagnodase pnyric dyke, Ytte Karvika Granite intruding supracrustal belt, Gautelis	Plagioclase phyric dyke, Blombakk	Borge pluton, felsic pegmatite cutting gabbro, Vestvågøy Foliation-cutting granite dyke. Kattfjord complex. Oterneset. Kvalgva	Grante, Sjangell	Flakstadøy complex, pegmatite in Napp gabbro, Flakstadøy Torset pluton, granite I angev	Erstjord granite, Kvaløya	Flakstadøy complex, pegmatitic pod in gabbro, Flakstadøy SW Lofoten pluton. Ballsdad mangerite. Vestvågøv	Monzonite gneiss, migmatitic, Træna	l jukktjellet granite, Selland Raftsund pluton, charnockite, Austvågøy	Borge pluton, gabbro, Vestvågøy	Amphibolite enclave, Ryggedalen	Granite, Svartdal Protolith of migmatite leucosome. Siona	Quartz monzonite gneiss, Sjona	reisic granulte, vikari, sitautii jordeti Sund-Ølkona pluton, mangerite, Flakstadøy	Eidsfjord complex, monzonite, Langøy Syenite gneiss, Nesøy	Syenite gneiss, Høgtuva, Melfjell	Granite, Vassijaure Mafic granulite, enclave in Vikan gneiss, Straumfjorden	Quartz monzodiorite, E of Tärnaby Hopen pluton charpockite. Austvägger	Hopen pluton, mangerite, Austvägøy	Felsic granulite, Biokkneset, Biokken, Sigerfjord Ritsem granite	Lødingen pluton, granite, Hinnøy	Toriaire overlain by Supractiostal Bert, Gautens Metagabbro Mjelde-Skorelvvatnbelt, Kvaløya	Diorite sill in Vanna Gp, Jøvika-Fakken, Vannøya	Gabbronorite dyke, Simavik Neosome, Grunfarnes, southwest Senia	Felsic granulite, Husvågen	Leucosome (+melanosome), migmatite, Brokløys tunnel, Sigerfjord	maric dyke intruding bakkejord pluton, kvallya, ampribolite Neosome in Kattefjord gneiss, Torsnes, Kvalløya	Granite in Kattfjord gneiss, Torsnes, Kvaløya	Coalse granitic granitic in Lorsines shear 2016, Totsines, Nyaliaya Felsic granitic gneiss, Bremnes/Bogen	Granodiorite, eastern flank of Svanfjellet belt, Senja	Mikkelvik alkaline stock, nepheline syenite Granodiorite, Grunnfarnes, southwest Senia	Tonalite, Bakkejord pluton, Kvaløya	batjord gnetss, skarstjord area, kingvassøya Tonalite gnetss, Langsund, Ringvassøy	West Troms Foliated tonalite, Skåningen, Vannøya
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Vradal granite pluton, granite Byklom granite Byklom granite Byklom granite Howing granite-morizonite complex, granite Granulite-facies leucosome, Ørsdalen Torsdasfjelli granite, porphyritic granite Augen gneiss, Suldal	Sirdal belt, Granifold, 73% SiO2 Sirdal belt, Granifold, 65% SiO2 Sirdal belt, Granifold, 72% SiO2	Sirdai Dett, Grantold, 11% SIOZ Otternes granite, leucogranite Granitic gneiss, Kleveland, RV42	Sirdal belt, Granitoid, 73%SiO2, Intrusion? Sirdal belt, Granitoid, 73%SiO2 Fannefoss auton unaise Birkeland	Mykleâs augen giness, binkelatiu Mykleâs matadioritet Girdu Lott Cranifold Afteland	Sindal belt, Grantfold, 17% SIOZ Fennefoss granodioritite augen gneiss, Hornnes	Charnockite gneiss, Gyavatnet Rosskreppfjord granite pluton, granite	Charnockite gneiss, Gyavatnet Granodiorite augen gneiss, Osen	Pegmatite leucosome, Gyavatnet Sirdal belt, Granitoid, 67% SiO2	Garnet migmatite gneiss, Gyadalen Sirdal belt, Granitoid, 67% SiO2	Sirdal belt, Granitoid, 74%SiO2, intrusion?	Feda granodiorite suite, Mainda august greiss Feda granodiorite suite, Veggla augen gneiss Endo granodiorite cuita. Endo august projec	Feda granodiorite suite, Feda augen gneiss Feda granodiorite suite, Liland augen gneiss	Garnet granite gneiss, Vanvik Morkheia monzonite suite, monzonite	Morkheia monzonite suite, sheared monzonite	Sunia sun ionateu ganite, poolite ganite Morkhela monzonite suite, monzonite	Heddal Gp, Skogsåa porphyry	Eiddal granite gneiss Hesjábutind gabbro sill, metagabbro	Offe Fm, ignimbritic metarhyolite, Liervatn Havdalsmo Gn. Dalaa nombyry	Fiellstadfjell granite, porphyritic biotite granite	Haglebu granite griess Brunkeberg Fm, felsic porphyry	Oftefjell Gp, Ljosdalsvatnet porphyry Venås ganite, quartz monzonite	Sørkjevatn Fm, metarhyolite-microgranite Hidderskon chamockite gneiss	Dalaa Fm, ignimbritic metarhyolite, Strond	Amannsbru rhyolite porphyry dyke	Nore Gp, Rødberg rhyodacite Flåvatn complex, granite gneiss, Svensheid	Gjerstad augen gneiss Vravatn complex granitic gneise S Vradal	Vrāvatri complex, grainte griess, s vrauai Vrāvatn complex, granodioritic gneiss, Kviteseid	Drivheia granite gneiss Vrāvatn complex, granitic gneiss, Kviteseid	Syrtveit granitic gneiss, N of Evje	Viavaii Compex, graniitic greess, rosseyi, vradai Bygland fm., metarhyolite, Uppsa	Red augen gneiss, Heddevatn Bydand fm. metarhyolite Thnsa	Grøssæ-Totak supracrustals, Fjellhovdane rhyolite	Grey augen gneiss, Neset, RV09 Grey augen gneiss, Valbjørgsvatn	Grey augen gneiss, Arevatn Trecoudal Em Musetal motarbuslita	Trossovdal Fm, Nyastøl metarhyolite	Breive Gp., Hovden metarhyolite Iveland-Gautestad mafic intrusion. Risdalslia	Breive Gp, quartz porphyry	Iveland-Gautestad maric intrusion, pegmatite phase, Frikstad Sletthei augen gneiss, N of Evie, RV09	Iveland-Gautestad mafic intrusion, Avesland	banded gheiss, metadolanite, Nisdalsila Banded gneiss, metadolanite, Risdalsila Lislevath granitic gneiss, RV42
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	trongly deformed, 69%SiO2	ak	ngly deformed, 71%SiO2 yolite	inheritance?	te, weakly deformed	s rhyolite	Banded gneiss, xenolith in Iveland-Gautestad intrusion, Klepptjern Sauda supracrustals, augen gneiss	neiss bro, weakly deformed, 58%SiO2	s, Bykle		formed, 50%SiO2	ag, 70%SiO2	1 76%SiO2			leformed, 67%SIU2	ndeformed, 64%SiO2	6SIO2		102						iss, Hisøy																
Banded gneiss, Vanne Tinn granite Tinn granite	Fine-grained biotite gneiss, strongly deformed, 69%SiO2	Lyngdal granite gneiss, Skomvak Ullensvang Gp, metarhyolite	Fine-grained biotite gneiss, strongly deformed, 71%SiO2 Skanevik supracrustals, metarhyolite	Granite gneiss, Gol	Coarse-grained hornblende granite, weakly deformed	Augen gneiss, køldal Rjukan Gp, Vermork fm, Skardfoss rhyolite	Banded gneiss, xenolith in Iveland- Sauda supracrustals, augen gneiss	Sauda supracrustals, granodiorite gneiss Pegmatitic zone of hornblende gabbro, w	Botsvatn complex, granodiorite gneiss, Bykle	Grante greiss, varivik Botsvatn complex, granite gneiss, Bykle	Medium-grained hornblende gabbro, unde Augen gneiss, Sand	Sirdal belt, Granitoid, 74%SiO2, inheritance? Fine-grained felsic gneiss, strongly deformed	Rjukan Gp, porphyritic rhyolite dyke, Myrstul Medium-drained biotite dranite undeformed 76%SiO2	Granite, Aurdal	Flå, granodioritic banded gnelss, Vardefjell SZ	Coarse-grained porphyritic felsic gnelss, strongly of Grotte suite, tonalite gnelss	Rjukan Gp, metarhyolite, Runhellohovet Medium-grained biotite-hornblende granite dyke, u	Fine-grained banded gneiss, strongly deformed, 72%SiO2	Kjukan Gp, metarnyolite, Uvdal Augen gneiss, Vanvik	Fine-grained felsic gneiss, strongly deformed, 75%SiO2 Suldal supracrustals, granodioritic gneiss	Fine-grained felsic gneiss, strongly deformed Tonalitic banded gneiss. Fla. Vardefiell shear zone	Metatoric description and the second	reretoss granite Grimstad Granite	Lamproite dyke, I romøy, sanda Glosenhela pegmatite	Pegmatite in Ivedestrand Metagabbro, Ringsjø	Tromay granulite complex, tonalite (enderbitic) gneiss, Hisay	Iromay granulite complex, maric (noritic) gneiss Altered tonalite, Ringsjø	veraug grenss Veldstad granodiorite gneiss, Veldstad, Sigdal	Jomas granodionte Metadacite gneiss, Bingen	Granodiorite, Snarum Charnockite gneiss, Flosta	Justøy tonalite, Justøy Justøy tonalite, Homborsund	Gjerstadvatn tonalite	Hakefjorden norite, contact melt	bonus granite, pegmatite-aplite Flå granite, phenocryst granite	Flå granite, granite, Høgfjellet, Flaskerudseter Göteborg dolerite. Tuve dyke	Vinga porphyry	Vinga porphyry Skuleboda rare-mineral pegmatite	Högsbo rare-mineral pegmätite Timmerhult rare-mineral permätite	Skantorp rare-mineral pegmatte	Sandsjön granite gneiss Segmon granite	Migmatitic diorite, Eldsvoll Bunketorp granite	Västergötland dolerites, Lunden dyke
reenark vinceggal gy, Janvas medalasasa Telemark Banded gneiss, Vánne Telemark Tinn granite Talemark Tinn granite		Rogaland Vest Agder Lyngdal granite gneiss, Skomv Suldal Ullensvang Gp, metarhyolite	Suldal Fine-grained biotite gneiss, stro Suldal Skänevik supracrustals, metarh	ark and Vost Ander			ark					Rogaland Vest Agder Sirdal belt, Granitoid, 74%SiO2, inheritance Suldal Fine-grained felsic gneiss, strongly deforme	Telemark Rjukan Gp., porphyritic rhyolite dyke, Myrstu Suidal Medium-crained biotite cranite undeformer		jell shear zone		¥		ark	Suldal Fine-grained felsic gneiss, strongly deformed, 75%S Suldal Supracrustals, granodioritic gneiss	iell shear zone	¥						Rongsberg Veldstad granodiorite gneiss, Veldstad, Sigdal		arg	Bamble Justøy tonalite, Justøy Bamble Justøy tonalite, Homborsund	Bamble Gjerstadvatn tonalite		den	Begna Flå granite, granite, Høgfjellet, Flaskerudseter Ideflorden Göteborg dolerite. Tuve dyke					Idefjorden Sandsjön granite gneiss Idefjorden Segmon granite		

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788 South Varanger-Kola bloc 789 South Varanger-Kola bloc 790 South Varanger-Kola bloc 791 South Varanger-Kola bloc	Kirkenes gneiss Varangercomplex Svanvik complex Hompen gneiss	Tonalitic gneiss, S of Ropelv Foliated tonalite, NW of Bugyanes Tonalitic gneiss, Eurulund, N of Svanvik Hompen gneiss, banded tonalite gneiss, E of Jarfjorden	K93-07 V92-06 136 V92-01	rz Zm Zm Zm Zm	U-Pb T 89-U T 89-U	th SMIT	up.int 2804 up.int 2813 up.int 2825 up.int 2902	3 ±6 15 ±34 12 ±9	9 9 5 6 4 34 9 9	Levchenkov et al., 1993 Levchenkov et al., 1993 Levchenkov et al., 1993 Levchenkov et al., 1993	N N N N 36	388900 592400 384400 404350	7737550 7768200 7713050 7736450	30.126670 69.722580 29.421730 70.004410 30.041130 69.501230 30.526890 69.718790	722580 Map 004410 Map 501230 Map 718790 Map
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792 Fennoscandia	Blekinge Province	Blekinge-Dalarna Dolerites, Falun dyke Rlekinna-Dalarna Dolerites i isean-Eäin dyke		B B			1945.7			Söderlund et al., 2005		1487600	6719600	15.578824 60.593585 15.681267 56.178392	.593585 Map
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795 Fennoscandia 796 Fennoscandia	Blekinge Province	Blekinge-Dalarna Dolerites, Nornäs dyke Blekinge-Dalarna Dolerites, Bräkne-Hohy dyke		Bd Bd						Söderlund et al., 2005		1361700		56	.422557 Map
	Blekinge Province	Blekinge-Dalarna Dolerites, Karlshamn dyke		Bdl						Söderlund et al.,			_	26	
798 Fennoscandia 799 Fennoscandia		Blekinge-Dalarna Dolerites, Nilstorp sill Riekinge-Dalarna Dolerites Forserum sill		Bd Bd						Söderlund et al.,		1442600	6391000	14.844117 57.640327	327 Map
		Blekinge-Dalarna Dolerites, Sårna dyke		Bd						Söderlund et al.,				61	
801 Fennoscandia		Central Scandinavian Delerites, Jämtland, Gimån dyke		Bdl	0-P		up.int 1246.4		7. 1.5	Söderlund et			6932000	16.000000 62.50	
803 Fennoscandia		Central Scandinavian Dolerites, Januaria, Suriusio uyne Central Scandinavian Dolerites, Ulvö, Gnarp dolerite		B Bd	Ċ		up.int 1256 up.int 1256			Söderlund et al.,		1572000			
		Scandinavian Dolerites,		Bd						Hogmalm et al.,					
803 remoscandia 806 Fennoscandia		Central Scandinavian Dolerites, Olvo, Sorika siii Central Scandinavian Dolerites, Ulvö, Alnö Draget dolerite		B g	- F		up.int 1257.4	5.2 ±1.4 7.4 ±4.3	3 4.3	Söderlund et al., 2004		1590550	6914500	17.552300 62.331800	7000 1800 ca.
		Scandinavian Dolerites,		Bd						Söderlund et al.,					
808 Fennoscandia 809 Fennoscandia		central scandinavian Dolerites, satakunta, mackmyra dolerite Central Scandinavian Dolerites, Satakunta, Furuvik dolerite		B 8			_ (-	3.4 ±6.3	.1 -1.1	Söderlund et al., 2006		1582000		17,300000 60.600000	
		Scandinavian Dolerites,	A731	Bdl			up.int 1258			Söderlund et al.,					
811 Fennoscandia		Central Scandinavian Dolerites, Västerbotten, Lycksele dolerite		Bd.	' '					Söderlund et		1621000	7135000	18.300000 64.300000	
813 Fennoscandia		central scariumavian Dolentes, Dalama, Alvuaisasen uyke Central Scandinavian Dolerites, Dalama, Ämån dyke		Zrn			up.int 1271.1	+.3 ±11 1.1 ±0.8		Söderlund et al., 2005				14.720000 61.319000	9000 ca.
814 Fennoscandia		Jungrfrun granite		Zrn						Åhall, 2001					
815 Fennoscandia 816 Fennoscandia		Uthammar granite Götemar granite. Krakemåla guarry		Zrn	8 8		up.int 1441	11 +5/-3		Ahall, 2001 Ahall 2001		1548270	6362070	16.607734 57.381671	1671 ca. 7844 ca
817 Fennoscandia		Gersebo granite, Kråkemåla area		Zru			٠								
	Blekinge Province	Eringsboda granite		Zrn			. ,			Åhall, 2001					
819 Fennoscandia 820 Fennoscandia	Blekinge Province Blekinge Province	Migmatitic paleosome, protolith age, Lindo island, eastern Blekinge Tonalitic aneiss. Tving suite. Torkö quarry, eastern Blekinge	AJ01:20 AJ01:19	Zun	8 A	SIMS 203	207/206 1750 207/206 1752	00 ± 10	0 0	Johansson et al., 2006 Johansson et al., 2006		1471400	6221350	15.345444 56.119667 15.395760 56.150381	
	Blekinge Province	Migmatitic neosome, protolith age, Lindö island, eastern Blekinge	AJ01:21	Zrn			_			Johansson et al.,					
822 Fennoscandia	Blekinge Province	Megacryst granodioritic gneiss, Tving suite, Bubbetorp	AJ01:16	Zrn				9 + 6		Johansson et al.,			6234800	15.602035 56.241153	1153 Map
	Blekinge Province	red apilite dyke, granite, hanardini, easteri breninge Felsic metavolcanite, Västanå fm, Näsum, Northern Skåne	83113	Zun			- (-			Johansson et al.,					
	Blekinge Province	Gneissic tonalite, Siggamåla, western Blekinge	89068	Zrn			conc 1765			Johansson et al.,		1425250			
825 Fennoscandia 827 Fennoscandia	Blekinge Province Blekinge Province	coastal gneiss, Kulleron, Western Blekinge Gneissic granite, Nättraby, eastern Blekinge	84086 AJ01:15	u Z		SIMS 207	conc 1765 207/206 1816	0 ± 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Johansson et al., 2006 Johansson et al., 2006				14.781682 56.158941 15.535756 56.194325	894 I Map 4325 Map
	Bornholm	Orthogneiss, Saltuna	BH3b	Zrn	_		-			Waight et al.			6114399		
829 Fennoscandia 830 Fennoscandia	Bornholm	Almindingen granite, Bjergebakke quarry Orthonneiss, Solbakke	BH8 A101:08	Zrn	_		up.int 1445 conc 1448						6108038	14.830310 55.118920 14.95990 55.174720	8920 GPS 4720 GPS
	Bornholm	Paradisbakke migmatite, Præstebo quarry	BH4	Zrn	_		conc 1449						6106328		
832 Fennoscandia 833 Fennoscandia	Bornholm	Orthogneiss, Rutsker Svaneke granite type III. Svenskehavn	BH27 BH158	Zrn	9-6-1 8-1 9-1	ICPMS 0	conc 1451 207/206 1451	1 +6	. 9	Waight et al., 2012 Zarins & Johansson, 2009	E 23	509982	6118347	14.759660 55.211440 15.156390 55.089720	1440 GPS 9720 GPS
	Bornholm	Svaneke granite type II, Svaneke harbour	AJ01:14	Zrn						Zarins & Johansson,			6109701		
835 Fennoscandia	Bornholm	Almindingen granite, Bjergebakke quarry	95044	Zru			up.int 1454	14 ±9		Zarins & Joha		489352	6108065	14.833050 55.119170	
837 Fennoscandia	Bornholm	varig granne, varig quarry Orthogneiss, NaturBornholm	BH15	Zrn		ICPMS 0	- (-			Waight et al.,			6102093		5500 GPS
	Bornholm	Rønne granite, Stubbegård quarry	BH13	Zrn	_					Waight et al., 2012			6106302	55	
839 Fennoscandia 840 Fennoscandia	Bornholm	Vang granodiorite, Ringebakker quarry Ranna granodiorite, Klinnalakkena grano	BH104 95041 ± BH90	Zrn		SIMS 207	207/206 1456	6 ± 8 ± 7 ± 7 ± 7		Zarins & Johansson, 2009 Zarins & Johansson, 2009		483134	6122118	14.734720 55.245270	245270 GPS
	Bornholm	Hammer granite, Moseløkken quarry		Zun	_								6125244		
	Bornholm	Hammer granite, Stejlebjerg quarry, Hammeren	95045	Zrn			_ ,			Zarins & Johansson,			6126533		
843 Fennoscandia 844 Fennoscandia	Bornholm	svaneke granite type II, Helletsgard quarry Orthogneiss, Rokkestenen, Rutsker, Hølling	95042 BH94	u Z	2 A	in swis	up.int 1458 conc 1459	41 ± 14 19 ± 18		Zarins & Johansson, 2009 Zarins & Johansson, 2009		490562	6104/20	15.11/7/0 55.089160 14.851660 55.216390	.089160 GPS 216390 GPS
845 Fennoscandia	Bornholm	Svaneke granite type I, Listed, Gulehald	BH6	Zrn			_			Waight et al., 2012			6110939	55	
846 Fennoscandia	Bornholm	Maegard granite, Maegard	BH24	Zrn			conc 1461	1,				484391	6117786	14.754730 55.206390	5390 GPS
	Bornholm	Orthopheiss, Knarregård guarry Orthopheiss, Knarregård guarry	AJ01:07	Zuz	2 6		conc 146			Zarins & Joha			6115071		2220 GPS
	Bornholm	Paradisbakkerne migmatite, paleosome + neosome, Praestebogård quarry 95043 +	arry 95043 + BH98	Zrn		SIMS up	_	2 ±8		Zarins & Johansson,		505955	6106294	15.093330 55.103330	

<sup>(1)</sup> Basement windows. North: Nordland-Finnmark, South: Hordaland-Trandelag; Western Gneiss Region, HP: part of the Western Gneiss Region hosting eclogite. Eastern Segment: North: Solar transect, Centre: Lake Vanern transect, South: S

## References

Agyei-Dwardo, N.Y., Augland, L.E., and Andresen, A., 2012, The Heggmovath supracrustals, North Norway - A late Mesoproterozoic to early Neoproterozoic (1050-930 Ma) terrane of Laurentian origin in the Scandinavian Canada, v. 212-213, p. 245-26.

Ahall, K.L., 1979, An investigation of the Peterozoic Sterungsund grainfoid infrusion, southwest Sweden: conflicting geochronological and field evidence, in Gower, C.F., Rivers, T., and Ryan, B., eds., Mid-Proterozoic Laurentia-Baltica, Volume 38: Spec. paper, Geological Association of Canada, special paper 38, p. 117-129.

Ahall, K.L., 1979, Mesurand acception for the Baltic Shelf-circ implications for rehanding and student as expected formation in SW Sweden: Geologista Foreingens I Stockholm Forhandlingar, v. 119, p. 37-43.

Ahall, K.L., Suemuson, D., and Peterozoic Start and student and student and correlations for rehanding supercontinent: Precambrian Research, v. 92, p. 1-20.

Corfu, F., and Heaman, L.M., 1996, Abstract. U-Pb isotopic time constraints, and H and Pb source characteristics of the Larwik plutonic complex, Oslo paleoriff. Geodynamic and geochemical implications for the rift evolution, V. M. Goldschmidt Conference, Volume 1: Journal of Conference Abstracts, Cambridge Publications, p. 120 Claesoso, S. 1987; Isotopic evidence for the Precambrian provenance and metamorphism of high grade paragneisses from the Seve Nappes, Scandinavian Caledonides. 1. conventional U-Pb zircon and Sm-Nd whole rock data: Contributions to Minder Soft by Mapes, entertial Scandinavian Charles, Searchinavian Models (Minder Soft by Special Publications, p. 261-273.
Connessy, S., Sand Paper, P. 1994. The Magnetic Service adming of Pasis microsoms, Models for Magnetic Searchinavian Special Publications, p. 261-273.
Connessy, S., Sand Paper, M. 1, 1994. England of Special Publications, p. 261-273.
Connessy, S., Sand Paper, M. 1995. The Magnetic Service S.G., Kulelend, K., Crfut, F., Armitage, P.E.B., Davidsen, B., Johansen, H.W., Pettersen, T., and Knudsen, S., 2007, Low-grade sedimentary rocks on Vanna, North Norway: a new occurrence of a Palaeoproterozoic (2.4.2.2 Ga) cover succession in northern Fennoscandia: Norwegian Journal of Geology, v. 87, p. 301-318 Andersen, T., Griffin, W.L., and Sylvester, A.G., 2007b, Svecononvegian crustal underplating in southwestern Femoscandia: LAM-ICPMS U-Pb and Lu-Hf isotope evidence from granites and gneisses in Telemark, southern Norway: Lithos, v. 93, p. 273-287
Andersen, T., Andersson, U.B., Graham, S., Aberg, G., and Simonsen, S.L., 2009, Granitic magmatism by melting of juvenile continental crust: new constraints on the source of Palaeoproterozolic granitoris in Fenoscandia from Hf isotopes in zircon: Journal of the Geological Society, London, v. 166, p. 233-247 Torsik, T.H., Andersen, T.B., Ashwal, L.D., Ramsay, D.M., and Roberts, R.J., 2006, Early Slurian mafficultramafic and granitic plutinism in conferenceaeous flysch, Magerey, northern Noway: U-Pb ages and regional significance: Journal of the Geological Society, London, v. 163, p. 291-301.
2007. Multispae metamorphic evolution and nature of the amphibolising-granitial recises transition in Lofden-Vesterate. Noway: Publ. in accessory inneresis: Chemical Secology v. 241, p. 108-128.
Rackots, R.J., Tidose, Manage, L.D., and Ramsay, D.M., 2007. Per-Loopodonian rappes of Finnmark, northern Noway: implications for the paleogeographic framework of the Scandinavian Caledonides: American Journal of Science, v. 307, p. 434-458 and Dahlgren, S., 2008, Perovskite U-Pb ages and the Pb isotopic composition of akaline voicanism initiating the Permo-Carboniferous Oslo Rift: Earth and Planetary Science Letters, v. 265, p. 256-269 Andersson, J., Soderlund, U., Comell, D., Johansson, L., and Möller, C., 1999, Sveconorwegian (-Grewillian) deformation, metamorphism and leucosome formation in SW Sweden, SW Baltic Shield: constraints from a Mesoproterozoic granite intrusion: Presambrian Research, v. 98, p. 151-171 Andersen, T., Laajoki, K., and Saeed, A., 2004b, Age, provenance and tectonostratigraphic status of the Mesoproterozoic Blefjell quartzlie, Telemark, southern Norway: Precambrian Research, v. 135, p. 217-244.

Andersen, T., Graham, S., and Sylvester, A.G., 2007a, Timing and tectonic significance of Sveconorwegian A-type grantitic magmitism in Telemark, southern Norway: new results from laser-ablation ICPMS U-Pb dating of zircon: Norges Geologiske Undersøkelse Bulletin, v. 447, p. 17-31 Davis, W.J., and Austrehen, H., 2001b, Zircon U-Pb geochronology in the Bergen Arc eclogites and their Proterozoic protoliths, and implications for the pre-Scandian evolution of the Caledonides in western Norway; Geological Society of America Bulletin, v. 113, p. 640-649. Austrheim, H., and Corfu, F., 2009, Formation of planar deformation features (PDFs) in zircon during coseismic faulting and an evaluation of potential effects on U-Ps systematics. Chemical Geology, v. 261, p. 25-31

No of Commission of Parts (A. S. Mosthura, A. A. Mein, C. M., Allen, C. M., Allen, C. M., Allen, C. M., Allen, C. M., Androglene, O. and Perskink, T. 2077, Timing to Sealer and Sea Armilage, P.E.B., Kullerud, K., and Bergh, S.G., 2003a, Preliminary U-Pb geochronology in the West Troms Basement Complex, North Norway: Archaean and Palaeoproterozoic events and younger overprints: Norges Geologiske Undersøkelse Bulletin, v. 441, p. 61-72 and van Breemen, O., 1998, U-Pb monazite ages in amphibolile- to granulte-faces orthogneisses reflect hydrous mineral breakdown reactions: Sveconorwegian Province of SW Norway: Contributions to Mineralogy and Petrology, v. 132, p. 336-353
Birkeland, A., Nordgulen, O., and Sigmond, E.M.O., 2001a, Correlation of supracrustal sequences and origin of terranes in the Sveconorwegian orogen of SW Scandinavia: SIMS data on zircon in clastic metasediments: Precambrian Research, v. 108, p. 293-318 Mansfeld, J., Sigmond, E.M.O., and Stein, H.J., 2002, Baltica-Laurentia link during the Mesoproterozoic: 1.27 Ga development of continental basins in the Sveconorwegian Orogen, southern Norway: Canadian Journal of Earth Sciences, v. 39, p. 1425-1440. Nordgulen, Ø., Sigmond, E.M.O., Tucker, R.D., Mansfeld, J., and Högdahl, K., 2003, Relations between 1.19-1.13 Ga continental magmatism, sedimentation and metamorphism, Sveconorwegian province, S Norway: Precambrian Research, v. 124, p. 215-241. Brander, L., Appelquist, K., Cornell, D., and Andersson, U.B., 2011a. (greous and metamorphic geochronologic evolution of grantiodis in the central Eastern Segment, southern Sweden: International Geology Review, v. in press
Brander, L., Soderlund, U., and Bingen, B., 2011b, Tracing the 1271-1246 Ma Central Scandinavian Dolerite Group mafic magnatism in Fennoscandia: U-Pb baddelejvite and Hi sotope data on the Moslatt and Børgerjell dolerities: Geological Magazine, v. 148, p. 632-643
Brewer, T.S., Ahali, K.L., Menuge, J.F., Storey, C.D., and Parrish, R.R., 2004, Mesoproterozoic bimodal volcanism in SW Norway, evidence for recurring pre-Sveconorwegian continental margin tectonism: Precambrian Research, v. 134, p. 249-273. Duning, G.R., and Pedersen, R.B., 1988. Li-Pb ages of ophiolities and arc-related putions of the Norwegian Caledonides: implications for the development of fapetus: Contributions to Mineralogy and Petrology, v. 98, p. 13-23
Duning, G.R., and Greiner, T., 2000. Li-Pb age dating and paleotectonic applications of trondplement from the type locality in the Central Norwegian Caledonides: Norges geologise undersweles Bulletin, v. 437, p. 15-46.
Effec E.A., Csmurdsen, P.T., Mayer, G.B., Kendrick, M.A., and Coffu, F., 2002, The News Shear Chose, north-central Norwegian Adv/7394 record of Early Carboniferous acutie extension and unorming Norwegian Journal of Geology, v. 82, p. 317-339 Skår, Ø., Marker, M., Sigmond, E.M.O., Nordgulen, Ø., Ragnhildstvetet, J., Mansteld, J., Tucker, R.D., and Liegeois, J.P., 2005, Timing of continental building in the Seconorwegian orogen, SW Scandinavia: Novwegian Journal of Geology, v. 85, p. 87-116. Bingen, B., Andersson, J., Soderlund, U., and Moller, C., 2008a, The Mesoproterozoic in the Nordic countries. Episodes, v. 31, p. 29-34.
Bingen, B., Andersson, J., Soderlund, U., and Moller, C., 2008a, The Mesoproterozoic in the Nordic countries. Episodes, v. 31, p. 29-34.
Bingen, B., Lamilton, M.A., Engulk, S., Stein, H.J., Stein, H.J., Stein, P.J., and Nordigulen, O., 2008b, Geotronogian rorgeny, SW scandinavia: Norwegian print of Geology, v. 88, p. 43-72.
Bingen, B., Nordigulen, O., and Volloa, G., 2008b, A four-phase model for the Svecconovegian rorgeny, SW scandinavia: Norwegian Journal of Geology, v. 88, p. 43-72.
Bingen, E., Nordigulen, O., and Volloa, G., 2008b, A four-phase model for the Svecconovegian rorgeny, SW scandinavia: Norwegian Journal of Geology, v. 88, p. 43-72.
Bingen, A., 1994, Geology of the Folda area, southern Trondheim Region, Calebonides, Norway: Norges Geologiske Underswelee Bulletin, v. 426, p. 53-75. 4 beack, H., Andersson, U.B., and Petersson, J., 2008. Petrological evidence for crustal melting, urmaking, and undercooling in an alkali-cacic, high-level intrivion: the late Sveconorwegian Vinga intrusion, SW Sweden: Mineralogy and Petrology, v. 93, p. 1-46. Claesson, S., Klingspor, I., and Stephens, M.B., 1983, U-Pb and Rb-Sr isotopic data on an Ordovician volcanic-subvolcanic complex from the Tjopasi Group, Koli Nappes, Swedish Caledonides: Geologiska Foreningens i Stockholm Forhandlingar, v. 105, p. 9-15. , and Laajoki, K., 2008, An uncommon episode of mafic magmatism at 1347 Ma in the Mesoproterozoic Telemark supracrustals, Sveconorwegian orogen - Implications for stratigraphy and tectonic evolution: Precambrian Research, v. 160, p. 299-307 Augland, L.E., Andresen, A., Corfu, F., Simonsen, S.L., and Andersen, T., 2012, The Belaim Nappe Complex: a record of Laurentian Early Silurian arc magmatism in the Uppermost Allochthon, Scandinavian Caledonides: Lithos, v. 146-147, p. 233-252.
Austin Hegardt, E., Cornell, D.H., Classson, L., Simakov, S., Stein, H.J., and Hannah, J.L., 2005, Eclogites in the central part of the Sveconorwegian Eastern Segment of the Baltic Shield: support for an extensive eclogite terrane: GFF, v. 127, p. 221-232. and Emmett T., 1992, U-Pb age of the Leifungsmyran gabbroic complex, Jotun Nappe, southern Norway: Norsk Geologisk Tlösskrift, v. 72, p. 369-374.

and Andersen, T.B., 2002, U-Pb ages of the Daisford Complex, SW Norway, and their bearing on the correlation of allochthonous crystalline segments of the Scandinavian Caledonides: International Journal of Earth Sciences, v. 91, p. 955-963 Sylvester, A.G., and Andresen, A., 2002b, Age and petrogenesis of the Thin granite, Telemark, South Norway, and its geochemical relationship to metarryolite of the Rjukan group: Norges geologiske undersøkelse Bulletin, v. 440, p. 19-26 Corfu, F., Gerber, M., Andersen, T.B., Torsvik, T.H., and Ashwal, L.D., 2011, Age and significance of Grenvillian and Silurian orogenic events in the Finamarkian Caledonides, northern Norway: Canadian Journal of Earth Sciences, v. 48, p. 419-440. Dahlgren, S., Heaman, L.M., and Krogh, T., 1990a, Abstract. Precise U-Pb zircon and baddeleyite age of the Hesjäbutind gabbro, central Telemark area, Southern Norway: Georytt, v. 17, p. 38 de Haas, G.J.L.M., Andersen, T., and Vestin, J., 1999, Detrital zircon geochronology: new evidence for an old model for accretion of the SW Batit. Shield: Journal of Geology, v. 107, p. 569-586.

de Haas, G.J.L.M., Nijland, T.G., Andersen, T., and Corfu, F., 2002, New constraints on the timing of deposition and metamorphism in the Bamble sector, south Norway: zircon and titanite U-Pb data from the Nelaug area: GFF, v. 124, p. 73-78. L., and Sodertund, U., 2009, Mesoproterozoic (1.47-1.44 Ga) orogenic magmatism in Fennoscandia; baddeleyte U-Pb dating of a sutte of massif-type anorthosite in S Sweden: International Journal of Earth Sciences, v. 98, p. 499-516 Christoffel, C.A., Connelly, J.N., and Ahall, K.I., 1999, Timing and characterization of recurrent pre-Sveconorwegian metamorphism and deformation in the Varberg-Haimstad region of SW Sweden: Percambrian Research, v. 98, p. 173-195 Andersson, J., 2001, Sveconowegian orogenesis in the southwestern Baltic Shield. Zircon geochronology and tectonothermal setting of orthogneisses in SW Sweden [Doctoral thesis]: Lund, Lund, Lund University
Andersson, J., Möller, C., and Johansson, L., 2002, Zircon chronology of migmatite gneisses along the Mylonite Zone (S Sweden): a major Sveconorwegian terrane boundary in the Baltic Shield: Precambrian Research, v. 114, p. 121-147 Austrheim, H., Corfu, F., Brythi, I., and Andersen, T.B., 2003, The Proterozoic Hustad igneous complex, a low strain enclave with a key to the history of the Western Gneiss Region of Norway: Precambrian Research, v. 120, p. 149-175 Bingen, B., and Siein, H.J., 2003, Molybdenite Re-Os dating of blottle dehydration melting in the Regaland high-temperature granulities, S. Norway: Earth and Planetary Science Letters, v. 208, p. 181-195
Bingen, B., Sidri, M.L., Torsvik, T.H., and Saeed, A., 2005, Timing of Late Neoproterozoic glaciation on Baltica constrained by detrital zircon geochronology in the Hedmark Group, south-east Norway: Terra Nova, v. 17, p. 250-258.
Bingen, B., Sidri, D., Marker, M., Signord, E.M.O., Nordgelan, O., Targhaf State, J., and Marker, M., Signord, E.M.O., Nordgelan, G., Targhindsveller, J., 2006, Molybdenite Re-Os dating constrains gravitational collapse of the Sveconorwegian orogen, SW Scandinavia: Norwegian J., Soderlund, U., and Moller, C., 2008a, The Mesoproterozoic in the Nordic countries: Episodes, v. 31, p. 29-34. Appelquist, K., Cornell, D., and Brander, L., 2008, Age, tectorion setting and petrogenesis of the Habo Volcanic Suite: Evidence for an active continental margin setting for the Transscandinavian Igneous Belt: 6FF, v. 130, p. 123-138 Ravna, E.J.K., and Kullerud, K., 2003b, A Late Ordovician U-Pb age for the Tromsø Nappe eclogites, Uppermost Allochthon of the Scandinavian Caledonides: Contributions to Mineralogy and Petrology, v. 145, p. 502-513. Ahall, K.L., and Schöberg, H., 1999, The 963 Vinga intrusion and post-compressional deformation in the Sveconorwegian orogen, SW Sweden: GFF, v. 121, p. 101-106.
Ahall, K.L., Connelly, J.M., and Brewer, T.S., 2000, Episodic rapakivi magmatism due to distal orogenesis? Correlation of 1.69-1.50 Ga orogenic and inboard, "anorogenic" events in the Baltic shield: Geology, v. 28, p. 823-826. Claeson, D.T., 1999, Geochonology of the Rymmen gabbro, southern Sweden; implications for primary versus inherited zircon in mafic rocks and rheomorphic dykes; GFF, v. 121, p. 25-31.
Claesson, S., 1980, A Rb-Sr isotope study of granitoids and related mylonities in the Tamās Augen Gneiss Nappe, southern Swedish Caledonides: Geologiska Föreningens i Stockholm Förhandlingar, v. 102, p. 403-420. Dahlgren, S., Brewer, T.S., Corfu, F., and Heanan, L.M., 1998, Sveconorwegian lamprotie dikes in the Proterozoic Bamble shear belt, South Norway: Trondheim, Norges geologiske undersøkelse, internal report, pp. 6. Cecys, A., Bogdanova, S., Janson, C., Bibikova, E., and Kornfalt, K.-A., 2002, The Stenshuvud and Taghusa grantioids: new representative of Mesoproterozoic magmatism in southern Sweden: GFF, v. 124, p. 149-162. Alm, E., Sundblad, K., and Schöberg, H., 2002, Geochemistry and age of two orthognelsses in the Proterozoic Missa-Vanern ore district, southwestern Scandinavia: GFF, v. 124, p. 45-61.
Andersen, T., 1997, Radiogenic isotope systematics of the Herefoss granite, South Norvay: an indicator of Sveconorwegian (Grenvillian) crustal evolution in the Baltic shield: Chemical Geology, v. 135, p. 139-158. Berglund, J., 1997, Mid-Proterozoic evolution in south-western Sweden: Göteborg, PhD thesis, Publication A15, Department of Geology, Earth Science Centre, Göteborg University.
Bingen, B., Demaiffe, D., and van Breemen, O., 1998, The 616 Ma old Egersund basaltic dike swarm, SW Norway, and late Neoprotorozoic opening of lapetus ocean: The Journal of Geology, v. 106, p. 565-574. Andréasson, P.G., Gee, D.G., Whitehouse, M.J., and Schöberg, H., 2003, Subduction-flip during lapetus Ocean closure and Baltica-Laurentia collision, Scandinavian Caledonides: Terra Nova, v. 15, p. 362-369. Andersen, T., Andresen, A., and Sylvester, A.G., 2002a, Timing of late- to post-tectonic Sveconorwegian granitic magmatism in South Norway: Norges geologiske undersøkelse Bulletin, v. 440, p. 5-18. Eliasson, T., and Schöberg, H., 1991, U-Pb dating of the post-kinematic Sveconorwegian (Grenvillian) Bohus granite, SW Sweden: evidence of restitic zircon: Precambrian Research, v. 51, p. 337-350 Ahlin, S., Austin Hegardt, E., and Cornell, D., 2006, Nature and stratigraphic position of the 1614 Delsjön augen granite-gneiss in the Median Segment of south-west Sweden: GFF, v. 128, p. 21-32 Andersen, T., Griffin, W.L., Jackson, S.E., Knudsen, T.L., and Pearson, N.J., 2004a, Mid-Proterozoic magmatic arc evolution at the southwest margin of the Baltic shield: Lithos, v. 73, p. 289-318. Ahali, K.L., 2001, Aldersbestämning av svärdaterade bergarter i sydöstra Sverige, SKB, Svensk Kärnbränslehantering AB, Swedish Nuclear Fuel and Waste Management Co, R-01-60, p. 28. Ahali, K.L., and Connelly, J.N., 2008, Long-term convergence along SW Fennoscandia: 330 m.y. of Proterozoic crustal growth: Precambrian Research, v. 161, p. 452-474. 2004, U-Pb age, setting and tectonic significance of the anorthosite-mangerite-charnockite-granite suite, Lofoten-Vesteralen, Norway: Journal of Petrology, v. 45, p. 1799-1819. Dahigren, S., Heaman, L.M., and Krogh. T., 1990b, Abstract. Geological evolution and U-Pb geochronology of the Proterozoic Central Telemark area, Norway: Geonytt, v. 17, p. 38-39. Austin Hegardt, E., Cornell, D.H., Hellström, F.A., and Lundqvist, 1., 2007, Emplacement age of the mid-Proterozoic Kungsbacka Bimodal Suite, SW Sweden: GFF, v. 129, p. 227-234. Baadsgaard, H., Chaplin, C., and Griffin, W.L., 1984, Geochronology of the Gloserheia pegmatite, Froland, southern Norway: Norsk Geologisk Tidsskrift, v. 64, p. 111-119. 1980, U-Pb and Rb-Sr systematics in a poly-orogenic segment of the Precambrian shield, central southern Norway: Lithos, v. 13, p. 305-323. ., 1997, Mid-Proterozoic evolution in south-Bingen, B., E Bingen, B., N Bingen, B., N Bingen, B., Bingen, B., Brander, Corfu, F., Bergh,

Ahâll, K.I., Cornell, D.H., and Amstrong, R., 1998, Ion probe zircon dating of metasedimentary units across the Skagerrak: new constraints for early Mesoproterozoic growth of the Baltic Shield: Precambrian Research, v. 87, p. 117-134

```
Eliasson, T., Persson, P.O., and Bergström, U., 2008a, U-Pb zircon age of a TIB-1 quartz monzonite from Hyltseyd north-east of Johkoping, south central Sweden, in Heliström, F., ed., Results from radiometric datings and other isotope analyses 2, Volume 2008-27, Sveriges Geologiska Undersokning, Rapport, p. 8-10. 2008. U-Pb zircon age of a TIB-1 monzogranite from Backada least of Johkoping, south central Sweden, in Helistrom, F., ed. Results from radiometric datings and other isotope analyses 2, Volume 2008-23. Sveriges Geologiska Undersokning, Rapport, p. 11-13. 2008. U-Pb zircon age of a TIB monzogranite from Haborarp south of Johkoping, south central Sweden, in Helistrom, F. ed. Results from radiometric datings and other isotope analyses 2, Volume 2008-23. Sveriges Geologiska Undersokning, Rapport, p. 17-18. Eliasson, T., Rimsa, A., Bergström, U., and Helistrom, F., 2008d, U-Pb zircon ion-probe geochronology of a pophyritic rhyolie from the Malmback volcanic area south-east of Johkoping, south central Sweden, in Helistrom, F., ed., Results from adiometric datings and other iotope analyses 2, v. 2008-27,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sveriges Geologiska Undersökning, Rapport, p. 14-16.
```

Glodny, J., Kuhn, Å. and Austrhein, H., 2008. Difficion versus recystalilization processes in Rb-Sr geochronology: isotopic relics in eclogite facies rocks, Western Geochronica et Cosmochrinica Acta, v. 72, p. 506-525.
Greilin, R.O., Srepens, M.B., and Person, P.O., 2002, Crystalinic beserement rocks in the Lower and Middle Allochtons, Vasterbotten, Sweden: Palaeoproterozoic U-Pb zircon ages from the north-central Swedish Caledonides, in Bergman, S., ed., Radiometric dating results 5, v. C834: Sveriges Geologiska Undersökning, Research Paper, p. 31-42 Engwik, A.K., Werger, K., Wortelkamp, S., Bast, R., Corfu, F., Korneliussen, A., Ihlen, P.M., Bingen, B., and Austrhelim, H., 2011, Metasomatism of gabbro - mineral replacement and element mobilization during the Sveconorwegian metamorphic event: Journal of Metamorphic Geology, v. 29, p. 399-423. Handke, M.J., Tucker, R.D., and Robinson, P., 1995, Abstract. Contrasting U-Pb ages for the Risberget augen gneiss in the Norwegian Caledonides: getting to the root of the problem: Geological Society of America Abstracts with Programs, v. 27, p. A226 Gromet, L.P., and Roberts, D., 2010, Early Ordovician ages of zircons from felsic rocks and a conglomerate clast, Frosta peninsula, Central Norwegian Caledonides: Norges geologiske undersøkelse Bulletin, v. 450, p. 60-64.

Hartz, E.H., Martin, M.W., Andresen, A., and Andersen, T.B., 2002, Volcainic rocks in the Devonlan Solund Basin, Western Norway large landsitides of Siturian (439 Ma) rhydiless. Journal of the Geological Society, London, v. 159, p. 121-128.

Hemman, M., M. Schold, A. L. Des Sudy of the Mortagorigation resistes, south Norway: implications for disturbed RNS-5 systems and for the temporal evolution of Mesoprotecrozic magnatism in Laurentia: Geochimica et Cosmochimica Acta, v. 58, p. 1899-1911

Hemman, S. Kiold, F.C., 1996, Geology, good-emistry and age of the "Tricolor gradine and some other Preciambrian Presearch, v. 128, p. 39-55.

Helström, F.A., Johansson, A., and Larson, S.A., 2004, Age emplacement of late Sveconorwegian monzogabroic dykes, SW Sweden: Precambrian Research, v. 128, p. 39-55. Hansen, B.T., and Lindh, A., 1991, U-Pb zircon age of the Görbjörnarp syenite in Skåne, southem Sweden: Geologiska Föreningens i Stockholm Förhandlingar, v. 113, p. 335-337

Sveriges Geologisk understoking, Rapport, p. 12-14.

And Andersson, J., eds., Results from radiometric datings and other isotope analyses 1, v. 2007.28, Sveriges Geologiska Undersokining, Rapport, p. 15-16.

Helstrom, F.A., Rundsvik, L., 2007abb, U-Pb zircon ion-probe age of an augen-bearing preissic grantle from the Onsala peninsula, south-west Sweden, in Helstrom, F.A., ed., Results from radiometric datings and other isotope analyses 2, v. 2008.27, Sveriges Geologiska Undersokining, Rapport, p. 25-26.

Helstrom, F.A., Rundsvik, L., 2008b, U-Pb zircon age of a gabbio from isle of Ron west of the Onsala peninsula, south-west Sweden, in Helstrom, F.A., ed., Results from radiometric datings and other isotope analyses 2, Volume 2008.27, Sveriges Geologiska Undersokining, Rapport, p. 23-24.

Hetherington, C.J., Encinovic, M.J. Williams, M.L., and Mahan, K., 2008, Understanding geologic processes with xenotime: Composition, chronology, and a protocol for electron prope are increased by the control of the control of

Helistrom, F.A., Bergstrom, U., and Lundqvist, L., 2007a, U-P z izroon ion-probe geochronology of a gneissic grainte in the Median Segment of the eastern Seconomegian Province, in Helistrom, F.A., and Andersson, J., eds., Results from radiometric datings and other isotope analyses 1, v. 2007;28

Hogdah, K., Jorsson, E., and Selbek, R.S., 2007, Geological relations and U-Pb geoching of Physiological performance of the Languar-Nordmark area western Bergstepen. Sweden: GFF, v. 129, p. 43-54.
Jarl, L.G., and Johansson, A., 1988, U-Pb zircon ages of granitoids from Smaland-Varmiand granite-porphyry belt, southern and central Sweden: Geologiska Foreningens I Stockholm Forhandlingar, v. 110, p. 21-28.
Jarl, L.G., 2002, U-Pb zircon ages from the Vaggeryd syenite and the adjacent Hagshult granite, southern Sweden: GFF, v. 124, p. 211-216.

Johansson, L., Andresson, P.G., and Schoberg, H. 1987, An occurrence of the Gula Nappe in the Western Cheiss Region, central Scandinavian Caledonides: Norsk Geologisk Tidsskrift, v. 67, p. 85-92.
Johansson, L., Apport, G. of the Processon Seathern Processon Chemics and the Processon Chemics and the Resolution of Canada, Special Paper 38, p. 131-148
Johansson, L., Schöberg, H., and Solyma, Z., 1993. The age and regional correlation of the Secolemian Gelfield grante, Vestranden, Norway, Norsk Geologisk Tidsskrift, v. 73. p. 133-143.
Johansson, L., Schöberg, H., and Wilkman, H., 1993, The early evolution of the Secolemian Gelfield grante, Vestranden, Norway, Indian Sweden: Precambrian Research, v. 64, p. 361-388. Johansson, A., Bogdanova, S., and Cecys, A., 2006, A revised geochronology for the Blekinge Province, southern Sweden: GFF, v. 128, p. 287-302.

Krogh, T.E., Ramo, S.L., Robinson, P., Terry, M.P., and Kwok, K., 2011, U-Pb zircon geochronology of eclogites from the Scandian Drogen, northern Western Gneiss Region, Novavey: 14–20 million years between eclogite crystallization and return to amphibilite facies conditions. Canadian Journal of Earth Sciences, v. 48, p. 441–472. E. Day, J.S., Eide, E., and Whitehouse, M.J., 2007, Tectonic evolution of the Arctic Norwegian Caledonides from a texturally and structurally-constrained multi-isolopic (Ar-Ar. Rb-Sr, Sm-Nd, U-Pb) study: American Journal of Science, v. 307, p. 459-526. Expensive membran and the Kalak Nappe Complex, Arctic Norwegian Caledonides and constraints on Neoproterozoic terrane assembly in the North Atlantic region: Precambrian Research, v. 160, p. 245-276. Kiel, H.M., Cornell, D.H., and Whitehouse, M.J., 2003. Age and emplacement conditions of the Chalmers maife intrusion deduced from contact melts: GFF, v. 125, p. 213-220.

Kirkland, C.L., 204, J.S., and Whitehouse, M.J., 2005, Farly Silurian magnafian and the Scandian evolution of the Kalak Nappe Complex. Firmmark, Arctic Norway, - Constraining pre-Scandian deformation in the Kalak Nappe, Complex presentation in the Kalak Nappe, Complex presentation and tale Nappe Complex, Norwagan Caledonides. Implications for neoproteorosic paleogeography and tectonics. The Journal of Geology, v. 115, p. 21-41. Kirkland, C.L., Daly, J.S., and Whitehouse, M.J., 2007, Provenance and ferrane evolution of the Kalak Nappe Complex, Norwagan Caledonides. Implications for neoproteorosic paleogeography and tectonics. The Journal of Geology, v. 115, p. 21-41. Knudsen, T.L., Andersen, T., Whitehouse, M.J., and Vestin, J., 1997, Detrital zircon ages from southern Norway - implications for the Proterozoic evolution of the southwestern Baltic Shield: Contributions to Mineralogy and Petrology, v. 130, p. 47-58 Knudsen, T.L., and Andersen, T., 1999, Petrology and geochemistry of the Tromay gneiss complex, South Norway, an alleged example of Proterozoic depleted lower continental crust: Journal of Petrology, v. 40, p. 909-933.

Lamminen, J. Andrersen, T., and Nystuen, J.P., 2011, Zircon U-Pb ages and Lu-Hf isotopes from basement rocks associated with Neoproterozoic sedimentary successions in the Sparagmite Region and adjacent areas, South Norway; the crustal architecture of western Baltica: Norwegian Journal of Geology, v. 91, p. 35-55 Larchitecture of western Baltica: Norwey of Norway; Report, v. 95, 152, p. 1-16. Kullerud, K., Skjerlie, K.P., Corfu, F., and de la Rosa, J.D., 2006, The 2.40 Ga Ringvassoy mafic dykes, West Troms Basement Complex, Norway: The concluding act of early Palaeoproterozoic continental breakup: Precambrian Research, v. 150, p. 183-200. Larsen, Ø., Skår, Ø., and Pedersen, R.B., 2002, U-Pb zircon and titanite geochronological constraints on the late-/ post-Caledonian evolution of the Scandinavian Caledonides in north-central Norway: Norwegian Journal of Geology, v. 82, p. 1-13. Kullerud, L., and Machado, N., 1991, Abstract. End of a controversy: U-Pb geochronological evidence for significant Grenvillian activity in the Bamble area, Norway: Terra Abstracts, supplement to Terra Nova, v. 3, p. 504.

Larson, S.A., Cornell, D.H., and Amstrong, R.A., 1999, Emplacement ages and metamorphic overprinting of grantions in the Svectorous and properties in Variable States and Properties in the Svectorous ages and metamorphic overprinting of grantions in the Svectorous and Properties in Variable Svectorous and Properties in the Svectorous Svector and Svector

Lindh, A., Schöberg, H., and Annertz, K., 1994, Disturbed radiometric ages and their bearing on interregional correlations in the SW Baltic Shield: Lithos, v. 31, p. 65-79.

Lindh, A., 1995, The age of the Hinneryd grantle – its significance for interpreting the terranes of the southern Baltic Shield: GFF, v. 118, p. 163-168.

Lundmark, A., An and Corfu, F., 2007, Age and origin of the Adral dilke complex, SW Nowayer, Presidential and proving and the origin of Caledonian grantles in basement nappes: Tectonics, v. 26, p. 150-07, 1-13, doi:10.1029/2005TC001844.

Lundmark, A. M., 2001, S., Sugigin, S., and Selbekk, R., 2007, Proteorozic evolution and provenance of the high-grade Jotun Nappe Complex, SW Nowayer, U-Pb geochronology; Prezambrian Research, v. 159, p. 133-154.

Lundmark, A. M., coffu, E., Spürgin, S., and Selbekk, R., 2007, Proteorozic evolution and provenance of the high-grade Jotun Nappe Complex, SW Norway, and causes of repeated AMCG magmatism along the Baltoscandian margin: Contributions to Mineralogy and Petrology, v. 155, p. 147-163. Lundvist, 1., and Skiold, T., 1992, Preliminary age-dating of the Amál Formation, SW Sweden: Geologiska Fóreningens i Stockholm Forhandlingar, v. 114, p. 461-462.
Laajok, K., Corfu, F., and Andersen, T., 2002, Lithostratigraphy and U-Pb geochronology of the Telemark supracrustals in the Bandak-Sauland area, Telemark, South Norway: Norwegian Journal of Geology, v. 82, p. 119-138. Lajok, K., and Corfu, F., 2007, Lithostratigraphy of the Mesoproterozoic Vernork formation, central Telemark, Norway: Bulletin of the Geological Society of Finland, v. 79, p. 41-67.

Mansfield, J., 2000, Abstract, 200 m.y. of episodic crustal growth in the Østford-Akershus sector, SE Norway, 24 Nordiske Geologiske Vintermote, 6-9 Jan 2000: Trondheim, Norwegian Geological Society, Geonytt, p. 115. Lundqvist, T., and Persson, P.-O., 1999, Geochronology of porphyries and related rocks in northern and western Dalarna, south-central Sweden: GFF, v. 121, p. 307-322.

Morton, A., Fanning, M., and Milner, P., 2008. Provenance characteristics of Scandinavian basement terrains: Constraints from detrital zircon ages in modern river sedimentary Geology, v. 210, p. 61-85.
Moller, C., 2008. Provenance characteristics of Scandinavian basement terrains: Sweden: Late Sweden: L Volume 220, Geological Society, London, Special Publications, p. 65-81

Meyer, G.B., Grenne, T., and Pedersen, R.B., 2003, Age and tectonic setting of the Nesaa Batholith: implications for Ordovician arc development in the Caledonides of Central Norway: Geological Magazine, v. 140, p. 573-594.

Moller, C., Andersson, J., Lundqvist, I., and Hellström, F.A., 2007, Linking deformation, migmatite formation and zircon U-Pb geochronology in polymetamorphic gneisses, Sveconorwegian province, Sweden: Journal of Metamorphic Geology, v. 25, p. 727-750.
Myhne, P.L., Ordfu, F., and Bergin, S., 2017, Bergin experience in the West Troms Basement Complex, North Norway: North Norway: Prezambrian Research, v. 186, p. 89-100.
Myhne, P.L., Ordfu, F., Bergin, S., and Kulletud, K., 2013, U-Pb geochronology along an Archaean geothersect in the West Troms Basement Complex, North Norway: Norwegian Journal of Geology, P. 2013, U-Pb geochronology along an Archaean geothersect in the West Troms Basement Complex, North Norway: Norwegian Journal of Geology, P. 2013, U-Pb geochronology and geochemistry of trondhjemites and a nortie pluton from the SW Trondhelm Region, Central Norwegian Caledonides. Norges Geologiske Undersøkelse Bulletin, v. 441, p. 5-16. Nilsen, O., Corfu, F., and Roberts, D., 2007, Silurian gabbro-diorite-trondhjemite plutons in the Trondheim Nappe Complex, Caledonides, Norway: petrology and U-Pb geochronology. Norwegian Journal of Geology, V. 87, p. 329-342.

Nissen, A.L., Roberts, D., and Gromet, L.P., 2006, U-Br zircon ages of a tonalite and a granodiorite dyke from the southeastern part of the Bindal Batholith, central Norwegian Caledonides: Norges Geologiske Undersøkelse Bulletin, v. 446, p. 5-9.

Nordgulen, Ø., and Schouenborg, B., 1990, The Heilhornet Pluton, north-central Norway: geological setting, radiometric age and implications for the Scandinavian Caledonides: Journal of the Geological Society, London, v. 147, p. 439-450. Nordgulen, Ø., and Skår, Ø., 2004, Mesoproterozoic crustal evolution of the Idefjorden terrane: U-Pb age determination of granitoids using LA-ICPMS analyses of zircon: GFF, v. 126, p. 31-32.

Nissen, A.L., and Wortman, G.L., 1993, U-Pb zircon ages from the Bindal Batholith, and the tectonic history of the Helgeland Nappe Complex, Scandinavian Caledonides: Journal of the Geological Society, London, v. 150, p. 771-783. Pasteels, P., Demaiffe, D., and Michot, J., 1979, U-Pb and Rb-Sr geochronology of the eastern part of the south Rogaland igneous complex, southern Norway: Lithos, v. 12, p. 199-208.
Paulsson, O., and Andreasson, P. G., 2002, Attempted break-up of Rodinia at 850 Mar. geochronological evidence from the Seve-Kalak Superterrane, Scandinavian Caledonides: Journal of the Geological Society, London, v. 159, p. 751-761 Nordgulen, Ø., Braathen, A., Corfu, F., Osmundsen, P.T., and Husmo, T., 2002, Polyphase kinematics and geochronology of the late-Kolistraumen detachment, north-central Norway: Norwegian Journal of Geology, v. 82, p. 299-316. North-Ly. Immig, structura assembly, metamorphism, and cooling of noppes in the post of the Lyone and the Norway: Rother Department of Geology, v. 165, p. 565-582. Norwegian Lyone and 469-a. Mail or a metatronalite from the Rosen Unit of the Lyone Magmatic Complex, norther Norway: Norges Geologiske Undersøkeise Bullenin, v. 428, p. 27-32. Pedersen, L.E., Heaman, L.M., and Holm, P.M., 1995, Further constraints on the temporal evolution of the Oslo Rift from precise U-Pb zircon dating in the Siljan-Skrim area: Lithos, v. 34, p. 301-315. Pasteels, P., and Michot, J., 1975, Geochronologic investigation of the metamorphic terrain of southwestern Norway: Norsk Geologisk Tidsskrift, v. 55, p. 111-134.

```
Vaasjok, M., and Sipia, P., 2001, U-P is stotopic determinations on baddeleyite and zircon from the Halti-Ridnitsokkk intrusion in Finnish Lapland: a further constraint on Caledonide evolution, in Vaasjok, M., ed., Radiometric age determinations from Finnish Lapland and their bearing on the Uniting of Precambrian volcano-sedimentary sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Zachrisson, E., Grelling, R.O., and Persson, P.O., 1996, Recognition of basement rocks in the metamorphic Seve Nappes: the U-b zircon age of the Nuortenjuone Gneiss, Upper Allochthon, central Swedish Caledonides, in Lundqvist, T., ed., Radiometric dating results 2, Volume C828: Sveriges Geologiska Undersökning, Research Papers, p. 57-77.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tucker, R.D., Body, R., and Barnes, S.J., 1999a, A U-Pb zircon age for the Raha intrusion, N. Norway: new evidence of basic magnatism in the Scandinavian Caledonides in Early Silurian time: Norsk Geologisk Tidsskrift, v. 70, p. 229-239.

Tucker, R.D. K. Ordob, R. and Rahimin, A., 1990b, Proterozoic evolution and age - province boundaries in the central part of the Western Gneiss Region, Norway: results of U-Pb dating of accessory minerals from Trondheimsfjord to Geiranger, In Gower, C.F., Rivers, T., and Ryan, B., eds., Mid-Proterozoic Laurentia-Baltica, v. 38,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Roberts, D. and Tucker, R.D., 1998, Late Cambrian Utbe zircon age of a deleting expression age, and a metatronthipment of the prices age of a deleting expression age, and a design and a second process. Not a second
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during metamorphism and deformation. Tectonics, v. 23, p. TC5005, doi:10.1029 /2003T0001498

Söderlund, U. Isachsen, C.E., Bylund, G., Heaman, L.M., Parchett, P.J., Vervoort, J.D., and Andersson, U.B., 2005, U-Pb baddeleylie ages, and Hf. Nd isotope chemistry constraining repeated mafic magmatism in the Fennoscandian Shield from 1.6 to 0.9 Ga: Contributions to Mineralogy and Petrology, v. 150, p. 174-194. Söderlund, U., and ASK, R., 2006, Evidence for two pulses (1215-1224 and ca. 1205 Ma) of bimodal magmatism along the Protogine Zone, S Sweden: GFF, v. 128, p. 303-310.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Wilkman, H., 1997, U-Pb zircnon ages of three granitoids from the Växjö region, south central Sweden, Radiometric dating results 3, Volume C830. Uppsala, Sweriges Geologiska Undersökning, Research Papers, p. 41-47 Wilkström, A., 1996, U-Pb zircnon dating results 2, Volume C828: Uppsala, Sveriges Geologiska Undersökning, Research Papers, p. 41-47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Stellenpoth, M.G., Andresen, A., Lindstrøm, M., Gromet, P., and Stellenpoth, L.W., 2003. The role of felsic and maric igneous rocks in deciphering the evolution of thrust-stacked terranes: an example from the North Norwegian Calendories. American Journal of the Geological Software Cological Software Calendories. The Calendories rew constraints from U-by a Calendories. The Calendories rew constraints from U-by Calendories. The Calendories rew constraints from U-by Calendories. The Calendories rew constraints from U-by Calendories. The Calendories of Calendories and Calendories. The Calendories of Calendories Calendories. The Calendories of Calendories and Calendories. The Calendories of Calendories and Calendories of Calendories. The Calendories of Calendories and Calendories. The Calendories of Calendories of Calendories of Calendories. The Calendories of Calendories of Calendories of Calendories of Calendories. The Calendories of Calendories of Calendories of Calendories of Calendories. The Calendories of Cale
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Söderlund, U., Jarl, L.G., Persson, P.O., Stephers, M.B., and Wahlgren, C.H., 1999, Protolith ages and timing of deformation in the eastern, marginal part of the Sveconorwegian orogen, southwestern Sweden: Precambrian Research, v. 94, p. 29-48
Söderlund, U., Möller, C., Andersson, L., and Whitehouse, M.J., 2002, Zircon geochronology in polymetamorphic gneisses in the Sveconorwegian orogen; SW Sweden: ion microprobe evidence for 146-1.42 Ga and 0.98-0.96 Ga reworking: Precambrian Research, v. 113, p. 193-225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               v. 33, Geological Survey of Finland, Special Paper 33, p. 247-253.
Vander Auwera, J., Bodie, O., Bingen, B., Liégeois, J.P., Bogaerts, M., Duchesne, J.C., DeWaele, B., and Longhi, J., 2011, Sveconowegian massif-type anorthosites and related granitoids result from post-collisional melting of a continental root: Earth-Science Reviews, v. 107, p. 375-397.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Williams, 1.5., and Claesson, S., 1987, Isotopic evidence for the Precambrian provenance and metamorphism of high grade paragnelisses from the Seve Nappes, Scandinavian Caledonides. 2. Ion microprobe zircon U-Th-Pb: Contributions to Mineralogy and Petrology, v. 97, p. 205-217
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Kodlerud, K., Ravar, E.K., Ordit, L., and Saverhorek, Y., 200, Geology, age and geochemical constraints on the origin of the Late Activates. West Troms Basement Complex in Northern Norway; Norwegan Journal of Geology, v. 89, p. 327-340.
Zhou, X., Branger, B., Denaffe, D., Liegenis, J.P., Herrogen, J., West, That 160 Mao dell Indexes on meta-charnockie: Implications of this A-type putton for the Sveconorwegan bett in Vest Agder (SW Norway): Lithos, v. 36, p. 51-66.
Zwaan, K.B., and Tucker, R.D., 1996, Abstract. Absolute and relative age relationships in the pre-cambrian West Troms Basement Complex, northern Norway, 22nd Norde Geological Winter Meeting. Abs. Finland.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rohr, T.S., Bingen, B., Robhisson, P., and Reddy, S.M., 2013, Geochronology of Palaeoproterozoic augen gneisses in the Western Ghesis Region, Norway: evidence for Sveconorwegian zircon neocrystallization and Caledonian zircon deformation: The Jurmal of Geology, in press.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Geological Association of Canada, Special Paper 38, p. 149-173.

Tucker, R.D., Robinson, P., Solli, A., Gee, D.G., Thorsnes, T., Krogh, T.E., Nordgulen, Ø., and Bickford, M.E., 2004, Thrusting and extension in the Scandian hinterland, Norway, new U-Pb ages and tectonostratigraphic evidence: American Journal of Science, v. 304, p. 477-532.

Tucker, R.D., Robinson, P., Solli, A., Gee, D.G., Thorsnes, T., Krogh, T.E., Nordgulen, Ø., and Bickford, M.E., 2004, Thrusting and extension in the Scandian hinterland, Norway, new U-Pb ages and tectonostratigraphic evidence: American Journal of Science, v. 304, p. 477-532.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Walderhaug, H.J., Torsvik, T.H., Elde, E.A., Sundvoll), B., and Bingen, B., 1999, Geochronology and palaeomagnetism of the Hunnedalen dykes, SW Norway: implications for the Sveconorwegian apparent polar wander loop: Earth and Planetary Science Letters, v. 169, p. 71-83.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Person, P.O., and Ripa, M., 1993, U-Pb zircon dating of a lama-type grantle in western Bergslagen, south-central Sweden, in Lundqvist, T., ed., Radiometric dating results, Volume C823. Uppsala, Sveriges Geologiska Undersokning, Research Papers, p. 41-45
Persson, P.O., Lindh, A., Schoberg, H., Harrsen, B.T., and Lagerblad, B., 1995, A comparison of the georetronologism of geochemistry of paglocidas-clominated grantlost across a major terrane boundary in the SW Battic Shield: Precambrian Research, v. 74, p. 57-72
Plontek, J.E., Connelly, J.N., and Ahall, K.I., 1978, Abstract. 1.3 Ga an oncogenic magnatism in Southwest Sweden: Abstracts with programs. Geological Society of America, v. 30.7, p. 293.
Ragmilistsvelt, J., Sgmond, E.M.O., and Tucker, R.D., 1994, Abstract: Early Potenzozia supransrial rocks wast of the Mandal-Ustaose fault zone, Hardange-vidda, South Norway: Terra Nova Abstract Early Potenzozia supransrial rocks wast of the Mandal-Ustaose fault zone, Hardange-vidda, South Norway: Terra Nova Abstract Early Potenzozia capacitation for the Mandal-Ustaose fault zone, Hardange-vidda, South Norway: Terra Nova Abstract Early Potenzozia rocks supransrial rocks wast of the Mandal-Ustaose fault zone, Hardange-vidda, South Norway: Terra Nova Abstract Early Potenzozia rocks supransrial rocks wast of the Mandal-Ustaose fault zone, Hardange-vidda, South Norway: Terra Nova Abstract Early Potenzozia rocks supransrial rocks wast of the Mandal-Ustaose fault zone, Hardange-vidda, South Norway: Terra Nova Abstract Early Potenzozia rocks are programmed to the Mandal-Ustaose fault zone, Hardange-vides, South Norway: Terra Nova Abstract Early Potenzozia rocks are programmed to the Mandal-Ustaose fault zone, Hardange-vides, South Norway: Terra Nova Abstract Early Potenzozia rocks are programmed to the Mandal-Ustaose fault zone, Hardange-vides are programmed to the Nova Abstract Early Potenzozia rocks are programmed to the Nova Abstract Early Potenzozia rocks are programmed to the Nova Abstract Early Potenzozia rocks are progra
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Geochronology of high-pressure mafic granulite dykes in SW Sweden: tracking the P-T-t path of metamorphism using Hf Isotopes in zircon and baddeleyite: Journal of Metamorphic Geology, v. 26, p. 539-560 Söderlund, U., Karlsson, C., Johansson, L., and Larsson, K., 2008b, The Kullaberg peninsula - a glimpse of the Proterozoic evolution of SW Fennoscandia: GFF, v. 130, p. 1-10.
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G., Nordgulen, Ø., Prestvik, T., Fanning, M., and Pedersen, R.-B., 2002, Ordovician magmatism, deformation, and exhumation in the Caledonides of central Norway; an orphan of the Taconic orogeny?: Geology, v. 30, p. 883-886.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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lutefurm-harfnum clock: Science, v. 293, p. 683-687.
Schersten, A., Arebäck, H., Connell, D., Hoskin, P., Aberg, A., and Armstrong, R., 2000, Dating mafic-ultramafic intrusions by ion-microprobing contact-melt zircon: examples from SW Sweden: Contributions to Mineralogy and Petrology, v. 139, p. 115-125.
Schersten, A., Larson, S.A., Cornell, D.H., and Stigh, J., 2004, Ion probe dating of a migmatite in SW Sweden: the fate of zircon in crustal processes: Precambrian Research, v. 130, p. 251-266.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Schouenborg, B.E., 1988, U-Pb zircon daling of cover rocks and cover-basement contacts, northern Vestranden, central Norvas Geologisk Tidsskrift, v. 68, p. 75-87.
Schouenborg, B.E., Johansson, L., and Gorbatschev, R., 1991, U/Pb zircon ages of basement gneisses and discordant felsic dykes from Vestranden, westernmost Baltic Shield and central Norvegian Caledonides: Geologische Rundschau, v. 80, p. 121-134
                                                                                                                                                                                          Pedersen, R.B., Furnes, H., and Dunning, G.R., 1997, A. U/Pb age for the Sulligiema Gabbro, N Norway: further evidence for the development of a marginal basin in Ashgill-Llandovery time: Geological Magazine, v. 128, p. 141-153
Pedersen, R.B., and Dunning, G.R., 1997, Evolution of arc crust and relations between contrasting sources: U-Pb (age), Nd and Sr isotope systematics of the ophibilitic terrain of SW Norway: Contributions to Mineralogy and Petrology, v. 128, p. 1-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rehnström, E.F., and Torsvik, T.H., 2003, Cambrian sediments and Projecozoic granites in the Dividalen-Torneträsk area, northern Scandinavia: Palaeomagnetism and U-Pb geochronology: GFF, v. 125, p. 131-138.

Rehnström, E.F., and Corfu, F., 2004, Palaeoproterozoic U-Pb ages of autochthonous and allochthonous granites from the northern Swedish Caledonides – regional and palaeogeographic implications: Precambrian Research, v. 132, p. 363-378
Pedersen, R.B., Dunning, G.R., and Robins, B., 1989, U-Pb ages of nepheline syenite pegmatites from the Selland Magmatic Province, N Norway, in Gayer, R.A., ed., The Caledonide geology of Scandinavia: London, Graham & Trotman, p. 3-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Selbekk, R.S., Stjerlie, K.P., and Pedersen, R.B., 2000, Generation of anorthösitic magma by H2O-fluxed anatexis of silica-undersaturated gabbro: an example from the north Norwegian Caledonides: Geological Magazine, v. 137, p. 609-621
Skar, Ø., Furnes, H., and Claesson, S., 1994, Proterozoic orogenic magmatism within the Western Gneiss Region, Sunnfjord, Norway: Norsk Geologisk Tidsskrift, v. 74, p. 114-126.
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Rohr, T.S., Corfu, F., Austheim, H., and Andersen, T.B., 2004, Sveconorwegian U-Pb zircon and monazite ages of granulite-facies rocks, Hisarøya, Gulen, Western Gneiss Region, Norway: Norwegian Journal of Geology, v. 84, p. 251-256.
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London, v. 160, p. 935-946.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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T.E., and Corfu, F., 1987, Uranium-lead zircon and titanite ages from the northern portion of the Western Gneiss Region, south-central Norway: Earth and Planetary Science Letters, v. 81, p. 203-211
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          western Sweden: Geologiska Föreningens i Stockholm Förhandlingar, v. 105, p. 1-8.
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Schärer, U., Wilmart, E., and Duchsene, J.C., 1996, The short duration and anorogenic character of anorthosite magmatism: U-Pb dating of the Rogaland complex, Norway: Earth and Planetary Science Letters, v. 139, p. 335-350
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Waight, T.E., Frei, D., and Storey, M., 2012, Geochronological constraints on granitic magmatism, deformation, cooling and uplift on Bornholm, Denmark. Bulletin of the Geological Society of Denmark, v. 60, p. 23-46.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pedersen, S., Andersen, T., Konnerup-Madsen, J., and Griffin, W.L., 2009, Recurrent Mesoproterozoic continental magmatism in South-Central Norway: International Journal of Earth Sciences, v. 98, p.1151-1171
Persson, P.O., Wahlgren, C.H., and Hansen, B.T., 1983, U-Pb ages of Proterozoic metaplutonics in the gnelss coughern of southern Varmland, south-western Sweden: Geologiska Foreningens i Stockholm Förhandli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               E., and Kahr, AM., 1980, The Rb-Sr and U-Pb ages of Proterozoic gneissic grantiolds in Central Varmland, Western Sweden: Seedogiska Undersokning. v. C777, p. 24-28.
E., Lidth, A., and Kähr, AM., 1981, The radiometric age of the Proterozoic gnapit led Shandship, wastern Varmland, Sweden: Geologiska Foreningens i Stockholm Forhandlingar, v. 103, p. 514-518.
E., Gordastever, R., and Kähr, AM., 1982, Zircon dating of polymetanophic rocks in southwestern Sweden: Sveridge Geologiska Foreningens i Stockholm Forhandlingar, v. 109, p. 39-45.
E., and Samuelsson, L., 1987, Rb-Sr and U-Pb isotope studies of grantioid putons in the Göteborg region, southwestern Sweden: Geologiska Foreningens i Stockholm Forhandlingar, v. 109, p. 39-45.
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precise age of the Sarek Dyke Swarm, northern Swedish Caledonides: Precambrian Research, v. 110, p. 241-254 Söderlund, U., 1996, Conventional U-Pb dating versus single-grain Pb evaporation dating of complex zircons from a pegmatite in the high-grade gneisses of southwestern Sweden: Lithos, v. 38, p. 93-105
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Rehnström, E.F., 2003, Geochronology and petrology of the Tielma Magmatic Complex, northern Swedish Caledonides - results and tectonic implications: Norwegian Journal of Geology, v. 83, p. 243-257.
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       Slagstad, T., Roberts, N.M.W., Marker, M., Rohr, T.S., and Schiellerup, H., 2013, A non-collisional, accretionary Sveconorwegian orogen: Terra Nova, v. in press, doi: 10.1111/ler.12001.
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