Profiling of EXTPAR for COSMO-7, COSMO-2 and COSMO-1

	COSMO-7	COSMO-2	COSMO-1
pollon	-170.0	-170.0	-170.0
pollat	43.0	43.0	43.0
startlon_tot	-18.0	-7.0	-7.0
startlat_tot	-18.0	-7.0	-7.0
dlon	0.06	0.02	0.01
dlat	0.06	0.02	0.01
ie_tot	601	701	1401
je_tot	601	701	1401

PROGRAM	RAW DATA	SWITCH	COSMO-7	COSMO-2	COSMO-1
extpar_topo_to_buffer	ASTER[1]	all .TRUE.	Extends	**2h 56m 52s**	**4h 48m 14s**
		lradtopo[2] = .FALSE.	beyond	**2h 41m 49s**	**2h 42m 54s**
		lfilter_oro[2] = .FALSE.	60° N	**2h 41m 31s**	**2h 42m 29s**
		lsso_param[3] = .FALSE.	…	-	-
	GLOBE	all .TRUE.	**0h 07m 45s**[4]	**0h 17m 45s**	**2h 08m 28s**
		lradtopo[2] = .FALSE.	**0h 04m 11s**	**0h 02m 48s**	**0h 03m 05s**
		lfilter_oro[2] = .FALSE.	**0h 04m 08s**	**0h 02m 31s**	**0h 02m 40s**
		lsso_param[3] = .FALSE.	**0h 03m 23s**[5]	**0h 02m 17s**	**0h 02m 32s**
extpar_landuse_to_buffer	Globcover	-	**0h 17m 58s**	**0h 11m 47s**	**0h 13m 04s**
	GLC2000	-	**0h 00m 47s**	**0h 00m 14s**	**0h 01m 16s**
extpar_aot_to_buffer	GACP	-	**0h 00m 21s**[6]	**0h 00m 25s**	**0h 01m 58s**
extpar_cru_to_buffer	CRU	-	**0h 00m 01s**	**0h 00m 01s**	**0h 00m 04s**
extpar_ndvi_to_buffer	SEAWIFS	-	**0h 00m 19s**	**0h 05m 14s**	**0h 28m 52s**
extpar_soil_to_buffer	HWSD	ldeep_soil[3] = .TRUE.	**0h 06m 56s**	**0h 03m 48s**	**0h 03m 53s**
		ldeep_soil[3] = .FALSE.	**0h 03m 32s**	**0h 01m 54s**	**0h 01m 56s**
	FAO	-	**0h 00m 08s**	**0h 00m 08s**	**0h 00m 19s**
extpar_flake_to_buffer	DWD	-	**0h 00m 40s**	**0h 00m 08s**	**0h 00m 13s**
extpar_albedo_to_buffer	MODIS	-	**0h 00m 45s**	**0h 21m 35s**	**1h 44m 48s**
extpar_consistency_check	FAO	-	**0h 02m 37s**	**0h 04m 37s**	**0h 13m 11s**
	HWSD	ldeep_soil[2] = .TRUE.	**0h 10m 16s**	**0h 13m 51s**	**0h 55m 43s**
		ldeep_soil[2] = .FALSE.	**0h 06m 13s**	**0h 08m 17s**	**0h 34m 05s**
Total (max)			**0h 45m 01s**	**3h 53m 41s**	**8h 12m 49s**
Total (min)			**0h 09m 01s**	**0h 34m 39s**	**2h 31m 13s**

Important to know is that the running time of the different programs depends on the resolution of the raw data on one hand and on the resolution and the number of grid points of the target grid on the other hand.

The computational time for ASTER (besides if lradtopo = .TRUE.), Globcover or the HWSD raw data is always approximately equal for the three different setups COSMO-7/-2/-1. The equal duration is, because the raw data is resolved on a finer grid than the target grid. Thus the expensive step is to go through the raw data. Additionally ASTER and Globcover are arranged in tiles, which leads to an increased use of I/O, which again is costly. The computational time is even increased, if the target grid is resolved finer than the raw data. This is due to the fact that additionally an interpolation or neighbor search must be performed. When using Globcover on a high resolved target grid (e.g. 30 meters) the computation of the land-use data can take up to several hours.

As the lsso_param does not increase the computational time by far, which can be seen in the case of GLOBE, these calculations are not performed for the ASTER raw data.

All the other raw data sets depend on the resolution of the target grid only. This is due to the fact that these are coarsely resolved and thus an interpolation in some way must be performed anyways. The finer the target grid is, the more interpolations must be performed, which is costly.

The performance is tested at CSCS on lema in the file system store.

[1] ASTER depends very much on the number of tiles that must be read; 1 tile is much faster than 2 and so on. For this reason try to use the smallest number of tiles as possible.
[2] Switch does change computations on the target grid.
[3] Switch does change computations on the raw data gird.
[4] Times displayed in red contribute to the maximal total.
[5] Times written in dark blue contribute to the minimal total.
[6] Violet numbers indicate, that they are used for both the minimal and maximal total.