

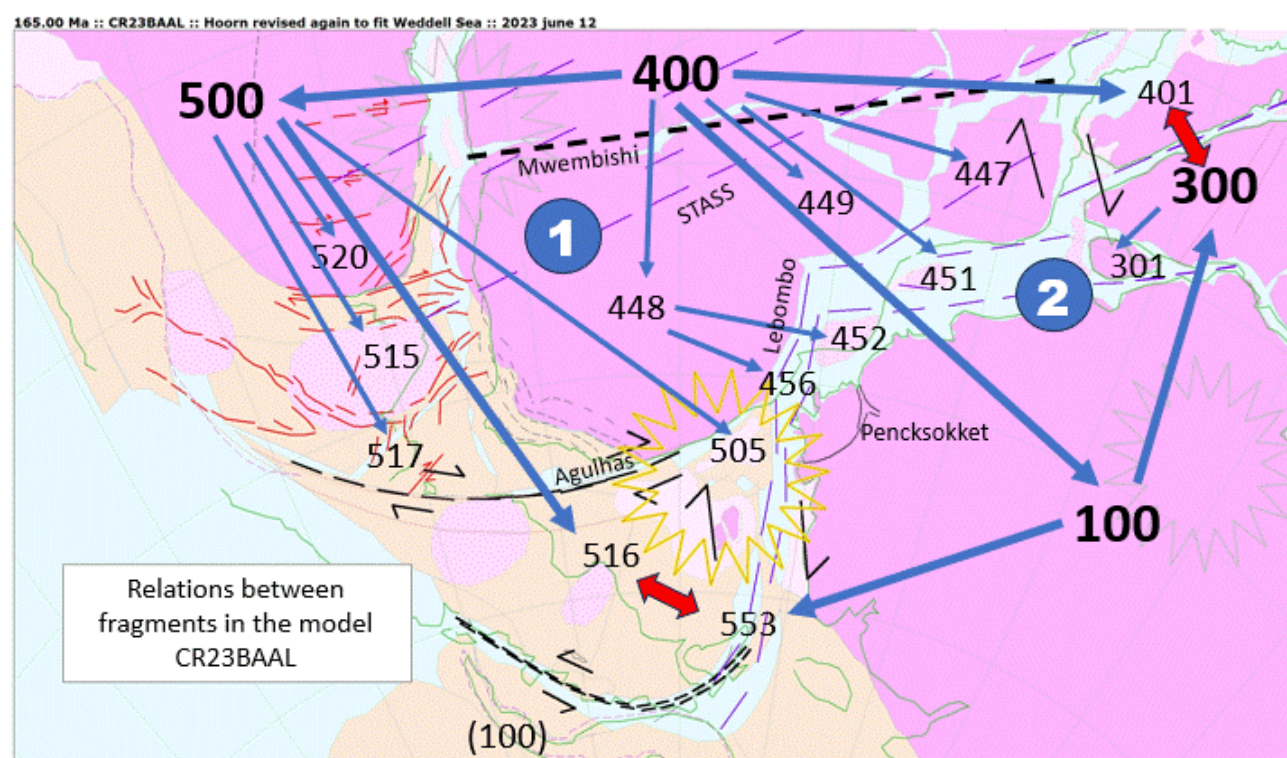
Gondwana reconstruction, finite rotation poles, models:

## Plate Model CR25BAKA (Hotspot Reference Frame)

### Africa versus hotspot reference frame

400	10.000	-40.880	139.310	1.950
400	20.000	-40.880	139.310	3.900
400	30.000	-40.880	139.310	5.850
400	40.000	-40.880	139.310	7.800
400	46.540	-40.880	139.310	9.000
400	72.500	-35.597	144.888	14.524
400	100.500	-28.461	145.638	21.691
400	130.000	-23.340	145.152	30.294
400	200.000	-14.554	146.585	41.021
400	270.000	-12.754	142.409	54.561
400	300.000	-16.161	135.487	61.424
400	340.000	-17.010	121.112	76.978

CR25BAKA



**Figure 1.** The structure of the plate model in two principal plate circuits, West Gondwana (1) and East Gondwana (2), that share the relation of Antarctica to Africa. The closure of each circuit is indicated in red. The motion of Africa with respect to a global reference frame is defined in the table at the head of this page. In all the subsequent tables, the motion of the fragments is presented with respect to a fixed Africa.

## Plate model CR25AAKA (Africa fixed)

### Plate Circuit 1: 553-100-448-400-500-516 (West Gondwana)

#### 100 Antarctica versus Africa

100	50.000	5.520	-31.400	8.000	
100	53.500	4.421	-38.136	9.706	
100	70.000	-0.880	-42.561	13.681	
100	83.640	-3.092	-37.532	18.477	<b>C34</b>
100	100.500	-1.026	-34.266	27.158	Base Cenomanian
100	113.200	-2.958	-31.896	34.483	Base Albian
100	121.400	-7.750	-28.344	40.576	<b>M0</b> , base Aptian
100	124.700	-11.050	-25.464	43.980	<b>M3/M2</b>
100	127.500	-12.257	-24.297	46.212	<b>M5/M4</b>
100	130.680	-11.850	-24.769	47.630	<b>M10</b>
100	134.700	-11.333	-25.488	48.728	<b>M11</b>
100	137.700	-10.865	-26.133	49.768	<b>M14</b>
100	142.300	-10.331	-26.865	51.014	<b>M18</b>
100	154.940	-8.965	-28.719	54.520	base Kimmeridgian
100	184.200	-9.760	-31.382	57.831	base Toarcian
100	230.000	-9.760	-31.382	57.831	
100	300.000	-10.848	-31.677	57.979	<b>CR25AAKA</b>

#### 448 Sub-Palala-Zoetfontein Africa versus Africa

455	30.000	-23.330	13.870	0.150	
455	121.400	-23.330	13.870	0.150	
455	130.680	32.763	-0.647	0.465	
455	154.940	44.634	-8.682	0.464	
455	178.000	44.634	-8.682	0.464	
455	179.000	28.097	-2.738	0.589	
455	230.000	28.097	-2.738	0.589	
455	300.000	28.040	16.895	0.319	<b>CR25AAKA</b>

#### 120 Mid-ocean ridge in Weddell Sea versus Africa

120	50.000	-5.119	-27.104	12.881	
120	53.500	-0.286	-31.516	14.214	
120	70.000	13.253	-35.299	17.318	
120	83.640	19.387	-32.781	22.018	
120	100.500	26.903	-33.658	29.184	
120	113.200	23.352	-31.733	35.089	
120	121.400	17.163	-28.525	39.357	
120	124.700	12.360	-25.682	41.857	
120	127.500	10.294	-24.548	43.716	
120	130.680	10.757	-24.477	45.121	
120	134.700	11.107	-25.087	46.206	
120	137.700	13.357	-25.607	46.886	

120	140.490	12.439	-25.431	47.933	
120	142.300	12.498	-25.489	48.476	
120	147.000	12.495	-26.550	49.712	
120	154.940	18.056	-28.499	49.797	
120	165.000	12.934	-27.180	52.119	
120	184.200	11.647	-29.451	53.660	
120	230.000	11.647	-29.451	53.660	
120	300.000	10.483	-29.713	53.422	<b>CR25AAKA</b>

#### **500 South America versus Africa**

500	22.000	61.850	-40.740	8.100	
500	43.960	63.127	-35.982	18.086	
500	48.000	63.252	-35.786	19.084	
500	53.000	63.465	-35.445	21.082	
500	67.000	63.754	-34.973	24.569	
500	71.900	63.924	-34.690	27.218	
500	83.640	64.157	-36.637	33.842	
500	100.500	58.780	-37.459	44.663	
500	113.200	54.590	-35.286	50.500	
500	124.700	50.566	-32.593	53.444	
500	142.300	46.802	-30.658	56.247	
500	555.000	46.802	-30.658	56.247	<b>CR25AAKA</b>

#### **516 Hoorn versus Africa**

516	22.000	61.850	-40.740	8.100	
516	43.960	63.127	-35.982	18.086	
516	48.000	63.252	-35.786	19.084	
516	53.000	63.465	-35.445	21.082	
516	67.000	63.754	-34.973	24.569	
516	71.900	63.924	-34.690	27.218	
516	83.640	64.157	-36.637	33.842	
516	100.500	58.780	-37.459	44.663	
516	113.200	54.590	-35.286	50.500	
516	121.400	45.330	-32.956	52.952	
516	124.700	42.763	-31.755	54.327	
516	130.680	36.214	-29.480	57.329	
516	134.700	33.960	-28.588	58.935	
516	137.700	31.802	-27.798	60.513	
516	142.300	29.827	-27.043	62.287	
516	154.940	24.878	-25.938	65.061	
516	165.000	22.545	-25.449	66.591	<b>CR25AAKA</b>

This plate circuit closes between the (conjectural) southern-and-eastern margin of the Malvinas Plateau (Hoorn, 516) and the Weddell Sea mid-ocean ridge (120). The objective has been to create a Weddell Sea mid-ocean ridge system that develops symmetrically about the ridge (120) initiated at 142.3 Ma. The elements of the plate circuit have been adjusted so as to minimise concertina-like growth of the ocean between Antarctica and

120. The relative movement of SAM and ANT now (CR25BAKA) also trace the smooth arcs recorded in the Weddell Sea, post 100 Ma.

Other fragments that make up the model in the area of the Bouvet triple junction are:

**505 Maurice Ewing Bank versus Africa**

505	22.000	61.850	-40.740	8.100	
505	43.960	63.127	-35.982	18.086	
505	48.000	63.252	-35.786	19.084	
505	53.000	63.465	-35.445	21.082	
505	67.000	63.754	-34.973	24.569	
505	71.900	63.924	-34.690	27.218	
505	83.640	64.157	-36.637	33.842	
505	100.500	58.780	-37.459	44.663	
505	113.200	54.590	-35.286	50.500	
505	121.400	55.845	-37.572	53.481	
505	124.700	52.938	-35.998	54.390	
505	130.680	47.174	-33.207	56.975	
505	134.700	44.253	-32.061	57.953	CR25AAKA

**451 Beira High versus Africa**

451	30.000	-23.330	13.870	0.150	
451	121.400	-23.330	13.870	0.150	
451	130.680	48.737	-16.807	0.564	
451	160.000	48.737	-16.807	0.564	
451	184.200	-23.686	32.121	18.045	
451	230.000	-23.686	32.121	18.045	
451	300.000	-24.362	32.797	17.956	CR25AAKA

**452 Limpopia versus Africa**

452	121.400	-23.330	13.870	0.150	
452	127.500	43.400	-127.090	1.714	
452	130.680	50.446	-115.096	2.200	
452	134.700	52.888	-107.920	2.797	
452	137.500	45.479	-88.603	3.269	
452	142.300	28.762	-76.795	4.497	
452	154.940	17.070	-68.550	8.091	
452	178.000	2.701	-67.670	10.468	
452	179.000	1.864	-66.658	10.631	
452	184.200	-0.407	-66.577	11.239	
452	230.000	-0.407	-66.577	11.239	
452	300.000	-2.206	-71.760	11.079	CR25AAKA

**456 St Lucia fragment versus Africa**

456	30.000	-23.330	13.870	0.150	
456	121.400	-23.330	13.870	0.150	
456	124.700	9.910	6.310	0.239	
456	130.680	-11.092	9.652	4.350	
456	134.700	-12.561	9.939	6.616	
456	178.000	-12.561	9.939	6.616	
456	179.000	-12.601	9.869	6.815	
456	230.000	-12.601	9.869	6.815	
456	300.000	-14.176	11.094	6.625	CR25AAKA

**449 (Zimbabwe) versus Africa**

449	30.000	-23.330	13.870	0.150	
449	121.400	-23.330	13.870	0.150	
449	130.680	48.737	-16.807	0.564	
449	230.000	48.737	-16.807	0.564	
449	300.000	70.303	-0.260	0.315	CR25AAKA

**447 (North Mozambique) versus Africa**

447	5.000	-23.330	13.870	0.300	
447	121.400	-23.330	13.870	0.300	
447	130.680	16.564	4.832	0.575	
447	230.000	16.564	4.832	0.575	
447	300.000	-22.655	41.397	3.006	CR25AAKA

There are also three fragments between South America (500) and the Hoorn fragment (516):

**520 Uruguay versus Africa**

520	22.000	61.850	-40.740	8.100	
520	43.960	63.127	-35.982	18.086	
520	48.000	63.252	-35.786	19.084	
520	53.000	63.465	-35.445	21.082	
520	67.000	63.754	-34.973	24.569	
520	71.900	63.924	-34.690	27.218	
520	83.640	64.157	-36.637	33.842	
520	100.500	58.780	-37.459	44.663	
520	113.200	54.590	-35.286	50.500	
520	124.700	50.566	-32.593	53.444	
520	130.680	49.251	-31.882	54.371	
520	142.300	46.151	-30.272	56.852	CR25AAKA

**515 South of BA No1 versus Africa**

515	48.000	63.252	-35.786	19.084	
515	53.000	63.465	-35.445	21.082	

515	67.000	63.754	-34.973	24.569	
515	71.900	63.924	-34.690	27.218	
515	83.640	64.157	-36.637	33.842	
515	100.500	58.780	-37.459	44.663	
515	113.200	54.590	-35.286	50.500	
515	121.400	51.684	-33.289	52.573	
515	124.700	48.599	-32.291	53.473	
515	130.680	43.826	-31.132	54.680	
515	142.300	37.327	-28.460	58.269	<b>CR2AAKA</b>

***517 South of BA No2 versus Africa***

517	22.000	61.850	-40.740	8.100	
517	43.960	63.127	-35.982	18.086	
517	48.000	63.252	-35.786	19.084	
517	53.000	63.465	-35.445	21.082	
517	67.000	63.754	-34.973	24.569	
517	71.900	63.924	-34.690	27.218	
517	83.640	64.157	-36.637	33.842	
517	100.500	58.780	-37.459	44.663	
517	113.200	54.590	-35.286	50.500	
517	124.700	44.382	-32.053	53.773	
517	128.000	41.974	-31.545	54.541	
517	142.300	33.873	-28.549	59.709	
517	145.000	33.873	-28.549	59.709	<b>CR25AAKA</b>

## Plate Circuit 2: 401-400-448-100-300 (East Gondwana)

### 100 Antarctica versus Africa (as under Plate Circuit 1)

100	50.000	5.520	-31.400	8.000	
100	53.500	4.421	-38.136	9.706	
100	70.000	-0.880	-42.561	13.681	
100	83.640	-3.092	-37.532	18.477	<b>C34</b>
100	100.500	-1.026	-34.266	27.158	Base Cenomanian
100	113.200	-2.958	-31.896	34.483	Base Albian
100	121.400	-7.750	-28.344	40.576	<b>M0</b> , base Aptian
100	124.700	-11.050	-25.464	43.980	<b>M3/M2</b>
100	127.500	-12.257	-24.297	46.212	<b>M5/M4</b>
100	130.680	-11.850	-24.769	47.630	<b>M10</b>
100	134.700	-11.333	-25.488	48.728	<b>M11</b>
100	137.700	-10.865	-26.133	49.768	<b>M14</b>
100	142.300	-10.331	-26.865	51.014	<b>M18</b>
100	154.940	-8.965	-28.719	54.520	base Kimmeridgian
100	184.200	-9.760	-31.382	57.831	base Toarcian
100	230.000	-9.760	-31.382	57.831	
100	300.000	-10.848	-31.677	57.979	<b>CR25AAKA</b>

### 401 Madagascar versus Africa

401	20.000	-23.330	13.870	0.300	
401	117.300	-23.330	13.870	0.300	
401	121.400	3.444	-89.178	1.146	
401	124.700	7.510	-98.917	5.122	
401	127.500	7.933	-99.963	8.169	
401	130.680	8.083	-100.337	10.368	
401	134.700	8.184	-100.589	12.667	
401	137.500	8.241	-100.731	14.467	
401	142.300	8.295	-100.868	16.767	
401	154.940	5.186	-93.093	19.841	
401	184.200	-2.104	-89.696	22.815	
401	230.000	-2.104	-89.696	22.815	
401	300.000	-4.838	-90.004	22.628	<b>CR25AAKA</b>

### India versus Africa

300	33.430	-14.263	-128.998	18.755	
300	42.860	-15.716	-136.023	25.451	
300	50.000	-15.495	-143.448	29.740	
300	53.500	-16.095	-143.748	32.572	
300	70.000	-18.123	-152.448	44.360	
300	72.500	-18.555	-153.403	45.719	
300	83.640	-20.771	-156.168	53.064	
300	89.000	-21.350	-157.655	57.705	
300	100.500	-21.453	-157.901	57.509	

300	113.200	-22.036	-158.090	56.831	
300	117.300	-22.417	-158.984	56.047	
300	121.400	-23.106	-158.695	55.860	
300	124.700	-23.468	-154.808	57.645	
300	127.500	-23.326	-151.498	59.656	
300	130.680	-23.537	-149.445	60.585	
300	134.700	-23.490	-147.563	61.816	
300	137.500	-23.793	-146.275	62.373	
300	137.700	-23.788	-146.162	62.458	
300	142.300	-23.457	-144.007	64.455	
300	154.940	-25.515	-140.541	64.873	
300	184.200	-28.574	-138.557	66.590	
300	230.000	-28.574	-138.557	66.590	
300	300.000	-29.310	-139.261	66.897	CR25AAKA

#### **448 Southern Kalahari versus Africa**

448	30.000	-23.330	13.870	0.150	
448	121.400	-23.330	13.870	0.150	
448	130.680	28.223	1.785	0.472	
448	178.000	28.223	1.785	0.472	
448	179.000	15.993	3.587	0.634	
448	230.000	15.993	3.587	0.634	
448	300.000	6.923	21.929	0.389	
448	555.000	6.923	21.929	0.389	CR25AAKA

**Fragments 448 (Southern Kalahari), 449 (Zimbabwe) and 447 (North Mozambique)** are listed under Plate Circuit 1.

This plate circuit closes between India and Madagascar. The movements of Madagascar against Africa and of India against Antarctica have been adjusted to minimise/eliminate relative movement between Madagascar and India before 130.68 Ma. The movement of India against Antarctica has been refined to ensure steady strike-slip movement of (Greater)India along (a) the long transform off Western Australia, 142.3 to 100.5 Ma and (b) the Davie Fracture Zone 142.3 to 130.68, i.e. while Madagascar is still fully attached to India.

#### **200 Australia versus Africa**

200	33.430	-15.942	-130.270	18.918	
200	42.860	-16.610	-128.786	22.130	
200	50.000	-14.186	-125.182	22.450	
200	53.500	-13.335	-120.656	23.769	
200	70.000	-11.130	-112.271	27.017	
200	83.640	-10.598	-102.652	28.805	
200	100.500	-10.480	-93.976	34.969	
200	113.200	-14.302	-83.433	38.001	
200	121.400	-20.610	-74.985	40.224	
200	124.700	-25.088	-69.856	41.199	



200	130.680	-26.630	-65.717	43.546	
200	134.700	-26.094	-65.179	44.738	
200	137.700	-25.612	-64.702	45.864	
200	142.300	-25.068	-64.169	47.206	
200	154.940	-23.691	-62.850	50.961	
200	184.200	-24.446	-63.153	55.100	
200	230.000	-24.446	-63.153	55.100	
200	300.000	-25.542	-63.514	55.391	
200	555.000	-25.542	-63.514	55.391	<b>CR25AACA</b>

Australia does not form part of either plate circuit. Rotations are included for completeness. The Australia-Antarctica poles are taken largely from published work supplemented with a closer fit to Antarctica in conformity with the principles adopted throughout our Gondwana reassembly.

### **301 Sri Lanka versus Africa**

301	33.430	-14.263	-128.998	18.755	
301	42.860	-15.716	-136.023	25.451	
301	50.000	-15.495	-143.448	29.740	
301	53.500	-16.095	-143.748	32.572	
301	70.000	-18.123	-152.448	44.360	
301	72.500	-18.555	-153.403	45.719	
301	83.640	-20.771	-156.168	53.064	
301	89.000	-21.350	-157.655	57.705	
301	100.500	-21.453	-157.901	57.509	
301	112.000	-21.980	-158.072	56.895	
301	113.200	-20.319	-155.042	58.848	
301	115.200	-17.763	-150.838	62.108	
301	117.300	-14.446	-145.867	67.932	
301	121.400	-9.402	-137.859	81.500	
301	124.700	-11.436	-137.768	79.820	
301	127.500	-12.932	-137.494	78.370	
301	130.680	-13.679	-136.563	78.447	
301	134.700	-14.416	-135.835	78.492	
301	137.500	-15.198	-135.258	78.198	
301	137.700	-15.234	-135.206	78.226	
301	142.300	-15.845	-134.282	78.794	
301	154.940	-17.760	-131.774	79.816	
301	184.200	-20.458	-130.698	81.734	
301	230.000	-20.458	-130.698	81.734	
301	300.000	-21.043	-131.333	81.875	
301	555.000	-21.043	-131.333	81.875	<b>CR25AACA</b>

Sri Lanka is confined between India and Antarctica, escaping first by growth of ocean between it and India, then between it and Antarctica.

#### 404 Madagascar Rise versus Africa

404	20.000	-23.330	13.870	0.300	
404	63.500	-23.330	13.870	0.300	
404	72.500	7.604	-43.820	2.112	
404	89.000	10.350	-48.603	7.098	
404	117.300	10.350	-48.603	7.098	
404	121.400	11.064	-55.884	7.923	
404	124.700	11.976	-71.000	11.108	
404	127.500	12.122	-77.581	13.823	
404	130.680	12.136	-80.908	15.857	
404	134.700	12.119	-83.579	18.025	
404	137.500	12.096	-85.261	19.743	
404	142.300	12.060	-87.028	21.956	
404	154.940	9.035	-82.924	25.441	
404	184.200	2.859	-81.680	28.450	
404	230.000	2.859	-81.680	28.450	
404	300.000	0.696	-81.957	28.181	CR25AAKA

#### CVR

*Delft, 2025 August 8*

Enquiries welcome at: [reeves.earth@planet.nl](mailto:reeves.earth@planet.nl)

More details on the website: [www.reeves.nl/gondwana](http://www.reeves.nl/gondwana)