

Southern Cape Geology: Evolution of a rifted margin

Post-conference 5-day excursion; 3 to 7 September 2016

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Summary

The Southern Cape Geology excursion combines the scenic beauty of South Africa's South Cape with the geological evolution of a Gondwanian rifted margin and break-up coastline. The tectono-sedimentary history of the on-land equivalents of the offshore hydrocarbon producing Bredasdorp Basin will be the key focus along the route from Cape Town eastwards past Africa's southern most point Cape Agulhas, Mossel Bay to Wildernis, returning via the interior Cape Fold Belt (CFB) mountains and valleys.

The excursion traverses several of the Mesozoic Uitenhage Group basins along the Worcester/Pletmos basin line, which forms a discontinuous east/west line of half grabens for over 400km. The syn-rift basin fill consists of continental to transitional sediments, equivalent to the offshore pre-1At1 synrift sequence containing the shallow marine gas reservoirs of the F-A, E-M and F-O gas fields.

The sedimentary geology and the basin and tectonic setting of the Uitenhage Group formations will be viewed and deliberated. Stops and discussions will also be on the "basement rocks" of the Palaeozoic Cape Supergroup and the "cover rocks" of the Cenozoic Bredasdorp Group.

Day 1 – Saturday 3 September 2016

The excursion route follows the Southern Cape coastline from Cape Town past Cape Hangklip, a visit to Stony Point and its colony of African Penguins, through the town of Hermanus for whale spotting, a stop at Die Kelder's cave, fitting in wine tasting in the Strandveld area and an opportunity to propose a toast to local sea god Adamastor at the southern most tip of the African continent, where the Atlantic and Indian Oceans meet. From here the route verges north to the coastal village of Arniston the overnight stop.

Most of the day will be spent travelling through Ordovician, Silurian Table Mountain Group rocks and briefly passing Uitenhage Group outcrops, an onshore (Haasvlakte Basin) extension of the offshore hydrocarbon bearing Bredasdorp basin. The overlying Cenozoic cover as well as coastal outcrops of Cape Supergroup basement rocks will be examined

Day 2 – Sunday 4 September 2016

The day focuses on Cenozoic coastal outcrops and the proximal facies of the offshore oil and gas Cretaceous sediments. These will be viewed in gorge and river cuts during a visit to the De Hoop Nature Reserve, as backdrop to Southern Right Whales, herds of Eland, Bontebok and Cape Zebra grazing on Cape Fynbos vegetation. The route continues inland and eastwards along the wave planed Southern Cape coastal plain, crossing the Breede River by human powered pontoon, past Heidelberg, Riversdale and Herbertsdale, with opportunities to examine the Mesozoic Uitenhage Group outcrops (Heidelberg and Mossel Bay Basins), on to our overnight stop at a game reserve near Mossel Bay.

Day 3 – Monday 5 September 2016

Arise for an early morning big five game drive before travelling to Mossel Bay to walk the coastal outcrops of the Robberg Formation at Cape St Blaize. Continue our route eastwards to Wildernis and panorama of the Quaternary "drowned" coastline, back to George from where it swings inland, over Outeniqua Pass into the Little Karroo along the land-locked,

fault-controlled, Cretaceous Oudtshoorn Basin. Overnight stop will be in Oudtshoorn, the Ostrich Capital of the world.

Day 4 – Tuesday 6 September

Opportunities to examine the tectono-sedimentary history of interior basin sediments will be interrupted by a visit to an Ostrich farm and opportunity to mount an ostrich. Winding our way westwards along Route 62 we pass through South Africa's port producing area of Calitzdorp, do several stops in Seweweekspoort and Kogmanskloof, cuts through the east west arm of the Cape Fold Belt. To arrive not too late the afternoon at Montagu hot spring resort and chance to lie back in the health restoring spring waters.

Day 5 – Wednesday 7 September

After our night at the hot spring resort we take a tractor drive up to a high mountain point overlooking the wine producing area of Robertson situated some 1,000m below us. This vista gives an excellent overview of the dramatic mountain forming Worcester fault, with plus 7km of vertical displacement and last movement in the late 1960's in the form a 6.3 earthquake. From here we continue through semi-arid country, cutting the CFB by tunnel to emerge on the other side with Table Mountain in the distance.

