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Implications for the South Atlantic early breakup and seafloor spreading from joint interpretation of magnetic anomaly maps and seaward-dipping reflector sequences (SDRS) visible in conjugated reflection seismic sections

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The late history of the South Atlantic passive margin evolution is investigated in the view of interlaced magnetic anomalies related to seafloor spreading lineations and anomalies caused by seaward-dipping reflector sequences (SDRS).
Our identification of previously unknown pre-M5n lineations in marine magnetic data offshore Argentina now makes the lineation pattern more complete and most importantly comparable and nearly symmetrical to the conjugated area offshore South Africa. Therefore, we can now compare several sets of published South Atlantic reconstruction poles to our new pre-M5n lineations off Argentina and their equivalents off South Africa. The analysis of the symmetry of SDRS and particularly of their along-margin extension further constrains the choice of possible reconstruction poles for the earliest opening phases.
The interpretation of pre-M5n lineations also defines the exact time (M9r) of the termination of excess breakup related volcanic activity and the transition to "normal" seafloor spreading. This is compared to absolute radiometric ages from Parana/Etendeka flood basalts. The volcanic activity related to the southernmost volcanic margin segments falls approximately into the same time window as the continental flood basalt activity. Unfortunately, more detailed conclusions suffer seriously from an ongoing discussion about the absolute ages of the pre-M0r lineations in different versions of polarity timescales.
New models for the magnetic response of SDRS reveal a high variability within the wedges on either side of the Atlantic and between the conjugated margins. Former identifications of anomaly M11r off Cape Town have already been questioned and can now be shown to be caused by structural or magnetization variations within SDRS.