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The formation and evolution of crustal blocks at rifted margins: input of an updated interpretation of the Jan Mayen microcontinent

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On the base of key studied areas, as the Iberia-Newfoundland conjugate system and Alpine outcrops of Tethysian margins, the assumed architecture of rifted margins evolved a lot this last decade. Geophysical data notably highlighted the complex basement architecture of the margin, which mixes distinct tectonic structures related to specific rifting deformation phases; and drilling attested the presence of a transitional basement in the deep setting, partly formed by exhumed subcontinental mantle. A new generation of conceptual, numerical and geological models followed these discoveries and gave a renewed picture of rifted margins formation and architecture. With this evolution, emerged a more specific distinction in crustal blocks formation during margin evolution. Besides microcontinents or oceanic plateaus, higher quality geophysical and geological data, together with numerical modeling, permitted the confident identification of continental ribbons, H blocks, extensional allochthons and outer highs. The processes controlling the formation and individualization of these crustal blocks during extensional deformation are still little understood despite the fact that these processes are keys to understand rifted margins evolution.

In this contribution, we focus on the microcontinent block type. Based on a new geophysical dataset available at the Jan Mayen Ridge, we present an updated seismic interpretation together with magnetic and gravimetric modeling. These results permitted us to better define the architecture of Jan Mayen and propose a new scenario for its evolution, what may help to better constrain the formation of microcontinent.