

The timing of Iapetus opening and its implications for understanding the break-up of Rodinia and evolution of Baltica

Understanding continents break-up and opening of oceans is fundamental for reasoning about geological evolution of the planet Earth. In this project, we are trying to define the timing of formation of the paleo-continent Baltica as well as the paleo-ocean Iapetus and to decide whether these phenomena happened still in the Neoproterozoic or in the Cambrian. To do so, we will be studying four key-localities, namely south-western Svalbard in the High Arctic, Varanger Peninsula in northernmost Norway, Kebnekaise-Indre Troms region in northern Scandinavian Caledonides (Sweden and Norway) and the Holy Cross Mts. in Poland, where Neoproterozoic to Cambrian rocks occur. To decipher a history recorded in those successions, we propose a multidisciplinary research approach involving fieldwork, extensive tectonic, geochronological, isotope geochemistry as well as geological thermobarometric studies. This research should contribute with universally important knowledge about processes responsible for continents break-up and oceans opening. More regionally, we will expand our knowledge about Neoproterozoic to Cambrian history of north-eastern proto-Europe. If our research shows that the paleo-ocean Iapetus was born in the Cambrian, this research will have enormous impact on existing plate tectonics models and can even question currently existing paradigms about Cambrian explosion of life.