



## The DeLong islands and Arctic tectonic reconstructions

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Geological 'piercing points' (large igneous provinces and dike swarms, faults, fold and thrust belts, dissected basins, etc.) are unique in space and time and provide the means to constrain tectonic reconstructions. The De Long Archipelago, Russian Arctic, may provide such a piercing point for Arctic reconstructions given the distinctive geology of some of its islands. A joint Russian (VSEGEI) – Swedish (SWEDARCTIC) expedition to the De Long Archipelago in September of 2013 allowed us to perform fieldwork on the De Long islands of Bennett, Henrietta, and Jeanetta. This was the first geological investigation of Jeanetta island since the expedition of M. Ermoleav in 1933.

The De Long Archipelago comprises five islands from <1 km<sup>2</sup> to >50km<sup>2</sup> in size: Bennett, Henrietta, Jeanetta, Zhakov, and Vilkitsky. Of these, the last two are quite young, entirely volcanic, and geologically unrelated to the others. Our initial results from Bennett are presented in a companion abstract (Tegner & Pease, 2014). Henrietta Island comprises clastic, volcanoclastic, and volcanogenic rocks (sandstone, siltstone, tuffaceous clastic sediment, gabbro, basaltic dikes, sills and flows). The rocks are folded and faulted, and have been inferred to be Carboniferous (foraminifera), late Devonian to Carboniferous (K-Ar ages), and Ordovician (Ar-Ar age) in age. Jeanetta Island consists of sandstone, shale, dikes and volcanogenic rocks. Their ages are unknown, but may be correlated with the rocks of Henrietta Island. The geology of the Henrietta and Jeanetta islands appears unique in the archipelago and, depending on their age/provenance, may provide a 'piercing point' for Arctic tectonic reconstructions reflecting M'Clintockian, Caledonian, or Ellesmerian genesis.

The application of modern geochronological and geochemical techniques will provide important information on the age and tectonic setting(s) of these clastic, volcanoclastic and volcanogenic deposits. We will present preliminary U-Pb zircon results from samples collected on Henrietta and Jeanetta islands. These data will be used to evaluate the provenance of the sediments in order to determine i) similarities and differences between the islands, ii) compare detrital populations to other deposits from other locations in the Arctic (e.g. Svalbard, Franz Josef Land, etc.), and iii) determine whether or not the De Long islands can be used as a piercing point and therefore test various tectonic reconstruction scenarios for the high Arctic.

[Tegner & Pease, 2014. Continental Flood Basalts of Bennett Island, East Siberian Sea: High Arctic geodynamics, EGU abstract.]