

## **Tephra in the effusive Bárðarbunga 2014-2015 eruption, Iceland.**

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On the 29<sup>th</sup> of August 2014 an effusive fissure eruption began north of Vatnajökull glacier, Iceland. The activity paused on the 30<sup>th</sup> of August and then continued for the next six months, ending on the 27<sup>th</sup> of February 2015. Chemical composition of erupted products was homogeneous and confirms a source in the Bárðarbunga volcanic system.

Tephra was produced throughout the eruption, although the tephra fall was not substantial. It was most significant in proximity of the eruption vents. However, tephra was detected as far as 40 km from vents and direct tephra fall was observed in up to 14 km distance. At these distances peles hairs, a tephra type that is fine and light enough to be transported tens of km, was observed. Closer to the eruption vents the longest measured pele's hair was 22 cm. At 20 km distance from source, the longest measured pele's hair was 8 cm. On the 17<sup>th</sup> of September 2014 a tumble-weed like transport of pele's hairs was observed. This is related to more vigorous gas flow (i.e. due to narrowing of conduit) forming longer pele's hairs than previously, that curled up and formed bundles that saltated over the sand during post depositional transport. These bundles were readily stopped in water ponds and were well preserved within the ponds in the vicinity of the eruption site.

Other types of tephra grains produced during the eruption were fine pele's tears (<0.5 cm), achneliths and golden pumice, up to 10 cm. Close to the vents some scoria was observed. All these grain types are formed in a gas charged high velocity fire fountains, as can be expected during a Hawaiian to Strombolian eruption. Vesicularity and density were measured and ranged from 82-93%, with an average of 89.5% and density ranges from 0.19-0.52 g/cm<sup>3</sup> with an average of 0.29 g/cm<sup>3</sup>.