



What effect do volcanic emissions have on sea level within the North Atlantic Ocean?

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Understanding sea level and the land-ocean flux of water is important when attempting to predict changes in future sea level. It is well documented that volcanoes have the power to alter the oceanic and atmospheric system. Notable volcanic effects include rapid cooling of the ocean (Graf et al.,(2007)), changes in precipitation (Grinsted et al.,(2007) & Marshall et al.,(2009)) and variations in sea level (Gleckler et al.,(2006)).

Previously, scientists agreed that sea level decreases after an eruption due to the reflection of incoming sunlight by atmospheric ash, reducing atmospheric and oceanic temperature (Graf, 2007). In contrast, Grinsted et al.,(2007) claim that both evaporation and latent heat is reduced as a result of this decreased incoming sunlight. Therefore, sea level is affected by the delayed transport of water from the land to the ocean due to this imbalance in the hydrological cycle. This causes sea level to rise within a year of an eruption and to drop 2-3 years afterwards, in contradiction to prior consensus, highlighting that uncertainties still exist in this field of science.

I will be undertaking research during the summer period focusing on sea level within the North Atlantic Ocean in order to determine whether the hypothesis brought forward by Grinsted et al.,(2007) is plausible. If so, this would raise some interesting questions about how unknown planetary processes could affect vital components of the Earth system. I wish to present my progress at the ICYESS conference and I would welcome audience feedback.