

Faculty of Geosciences







## First results from the Lateglacial and Early Universiteit Utrecht Holocene fill of Lac Retournemer (Vosges, France): another INTIMATE Example

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One of the current activities of the INTIMATE Network is the organization of bi-annual Research Training Schools for Early Career Scientists. During these INTIMATE Example Summer Schools, a mix of fieldwork, lectures and lab-based activities are executed focusing on a central theme/specific site. After successful training schools in Germany (2013), Rumania (2014) and Poland (2016), the fourth INTIMATE Example Research Training School centered around the coring of Lac Retournemer, France in July 2018.



We obtained a 18m sediment record from the deepest part of the lake before we reached the basal

glaciolacustrine sediments at 29 m below water level. The first results from the basal two meters of the sequence show a clear Lateglacial and Early Holocene laminated sediment record with Laacher See Tephra and a possible occurrence of Vedde Ash in the more siliciclastic Younger Dryas (GS-1) sediments.





Lac Retournemer is located in the Vosges mountains (eastern France) at 776m above sea level in the head-waters of the Vologne Valley and is currently an 11m deep lake behind a glacial threshold of igneous rock. This area is one of the wettest areas in France with high precipitation values and might therefore be a good site to record Icelandic tephras. Previous investigations in 1970-80 show that at least 15m of partially laminated sediments are present in this basin with also a possible occurrence of Laacher See Tephra.





**INTIMATE** event stratigraphy after Rasmussen *et al*. (2014) showing cold and warm phases in the NGRIP icecore







The Loss on Ignition profile on a depth scale shows lower organic values during the siliciclastic Younger Dryas interval. Within the Lateglacial Interstadial (GI-1) and Early Holocene multiple fluctuations occur which compares to the oscillations in the INTIMATE event stratigraphy for this time period. Preliminary palynological results support the Lateglacial and Early Holocene age of the sequence with open vegetation phases in zone 1 & 3 and a birch-pine forest in zone 2, with zone 4 resembling the Holocene. The differences in response with other proxies such as chironomids, geochemistry etc. are currently under investigation. The occurrence of Laacher See Tephra (2856 cm) and Icelandic tephras in the core will add to the existing tephra lattice for the Lateglacial and Early Holocene in Central and NW Europe.

