



## **Continuous, high-resolution spatial mapping of water isotopes in oceanic environment using a CRDS analyzer combined with a continuous water sampler.**

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The recent advancements of the laser-based technology –in particular Cavity Ring Down Spectroscopy, CRDS–gave birth to a new generation of water stable isotope analyzers that are user-friendly, compact and field deployable providing in-situ measurements. Furthermore, with last year’s launch of the Continuous Water Sampler front-end, CWS, the analyzer system added two additional dimensions to liquid water measurements: real-time and continuous. These features enable the user to construct high resolution water isotope data sets through time and space. Campaigns on the Sacramento-San Joaquin River Delta with the US Geological Survey where the CWS-CRDS system was deployed onto a boat to spatially map sections of the delta, validated the CWS performance and demonstrated its durability on brackish water. The next step for the CWS is to explore oceanic applications with seawater. Early in-house laboratory experiments showed stable performance with brine waters (3% concentration). For the field experiment, we have collaborated with the China State Oceanic Administration to deploy the CWS-CRDS in oceanic environments on cruises along the costal China and Antarctic. Here, we present the results of the analysis collected onboard and compared them with discrete sampling measurements. The long-term test has also allowed us to assess the durability and expected lifetime of the CWS membrane and to recommend the proper maintenance procedure for optimum performance under oceanic conditions.