Surface water sampling campaign of Caleque-Oshakati

Since 1973 Kunene River water (currently between 47 and 63 Million m³ per year) is carried from the Calueque Dam in Angola along a 150 km concrete canal to Oshakati in the central part of the Cuvelai-Etosha Basin which supplies drinking water to the most densely populated area of Namibia. Backup storage is held in the Olushandja Dam and in water towers at Ogongo, Oshakati and Ondangwa. About 4,000 km of pipeline radiates out from purification schemes and supplies most of the people and the livestock. The canal is open along most of its course to Oshakati, allowing livestock and people living nearby to freely make use of the water. During the rainy season, flood water from the vast Oshana drainage system swashes into the canal bearing a potential health risk when consumed untreated.

Within the SASSCAL project (www.sasscal.org) water samples were collected during field campaigns in November 2013 and November 2014 right before the onset of the rainy season, and in June 2014 and June 2015 after the rainy season. Water samples were collected at 14 sites along the canal for hydro-chemical analyzes and stable water isotopes (deuterium and oxygen-18). Temperature, electric conductivity, pH-value, and oxygen content were measured in the field. A Picarro L2120-i water vapor analyzer was used for stable isotope analyzes with accuracies of 0.2‰ and 0.8‰ for d¹⁸O and d²H, respectively. A discussion of isotope and hydro-chemical evolution of the canal water in comparison to local rain, Kunene source water and available groundwater will be presented in a context of water availability, vulnerability and water resources management.