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The UK Lakes Observatory: operational water quality products from Sentinel-2 MSI data

Abstract: The UK Lakes Observatory (UKLO) is a new operational service producing water quality data for approximately 1,000 waterbodies in England and Scotland from Sentinel-2a/b Multispectral Imager (MSI) data. The service currently produces a weekly aggregated chlorophyll-a product using a dynamic processing chain whereby the optimum retrieval algorithm(s) are selected based on the observed optical water type on a per-pixel basis. The algorithms have been calibrated and validated using data provided by the UK regulatory agencies. The data are distributed via a bespoke web-based visualisation platform that enables users to browse and explore the data in an immersive 3-D environment. The service enables users to explore a range of statistics summarising short- and long-term trends in water quality with the ability to provide immediate alerts to service users should water quality on a waterbody of interest exceed predefined thresholds. The data are currently being used by a number of stakeholders including the UK environment agencies and water utilities.