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Enhancing User Access to Oceanographic Data Through Commercial Cloud Services

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The Integrated Marine Observing System (IMOS) is a national project funded by the Australian government and was established in 2007 to deliver ocean observations to the marine and climate science community. Its mission is to undertake systematic and sustained observations and to turn them into data, products and analysis that can be freely used and reused for broad societal benefits.

IMOS infrastructure relied on educational cloud services such as the University of Melbourne and the University of Tasmania, which suffered from frequent outages, loss of service and data corruption. A notable gain in popularity and exposure of IMOS data has increased expectation on system's availability. In an attempt to improve this, IMOS has relocated its services to the commercial cloud service Amazon Web Services (AWS). The relocation has significantly increased IMOS' measured availability.

Using AWS enabled IMOS to improve the system architecture utilizing more advanced features like object storage (S3 - Simple Storage Service) as opposed to traditional file system. S3 has virtually unlimited affordable storage and supports redundancy (stores copies in multiple facilities and devices) and versioning (keeps tracks of a single object's multiple versions). Redesigning the IMOS system architecture around S3 has improved data availability and resilience while protecting against human errors in data handling and providing a disaster recovery plan.