

[High-Resiliency and Auto-Scaling of Large-Scale Cloud Computing for NASA's OCO-2 L2 Full Physics Processing \[1\]](#)

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Abstract:

Next generation science data systems are needed to address the incoming flood of data from new missions such as SWOT and NISAR where data volumes and data throughput rates are order of magnitude larger than present day missions. Additionally, traditional means of procuring hardware on-premise are already limited due to facilities capacity constraints for these new missions. Existing missions, such as OCO-2, may also require high turn-around time for processing different science scenarios where on-premise and even traditional HPC computing environments may not meet the high processing needs.

We present our experiences on deploying a hybrid-cloud computing science data system (HySDS) for the OCO-2 Science Computing Facility to support large-scale processing of their Level-2 full physics data products. We will explore optimization approaches to getting best performance out of hybrid-cloud computing as well as common issues that will arise when dealing with large-scale computing. Novel approaches were utilized to do processing on Amazon's spot market, which can potentially offer ~10X costs savings but with an unpredictable computing environment based on market forces. We will present how we enabled high-tolerance computing in order to achieve large-scale computing as well as operational cost savings.

Collaboration Area: [Cloud Computing](#) [3]

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