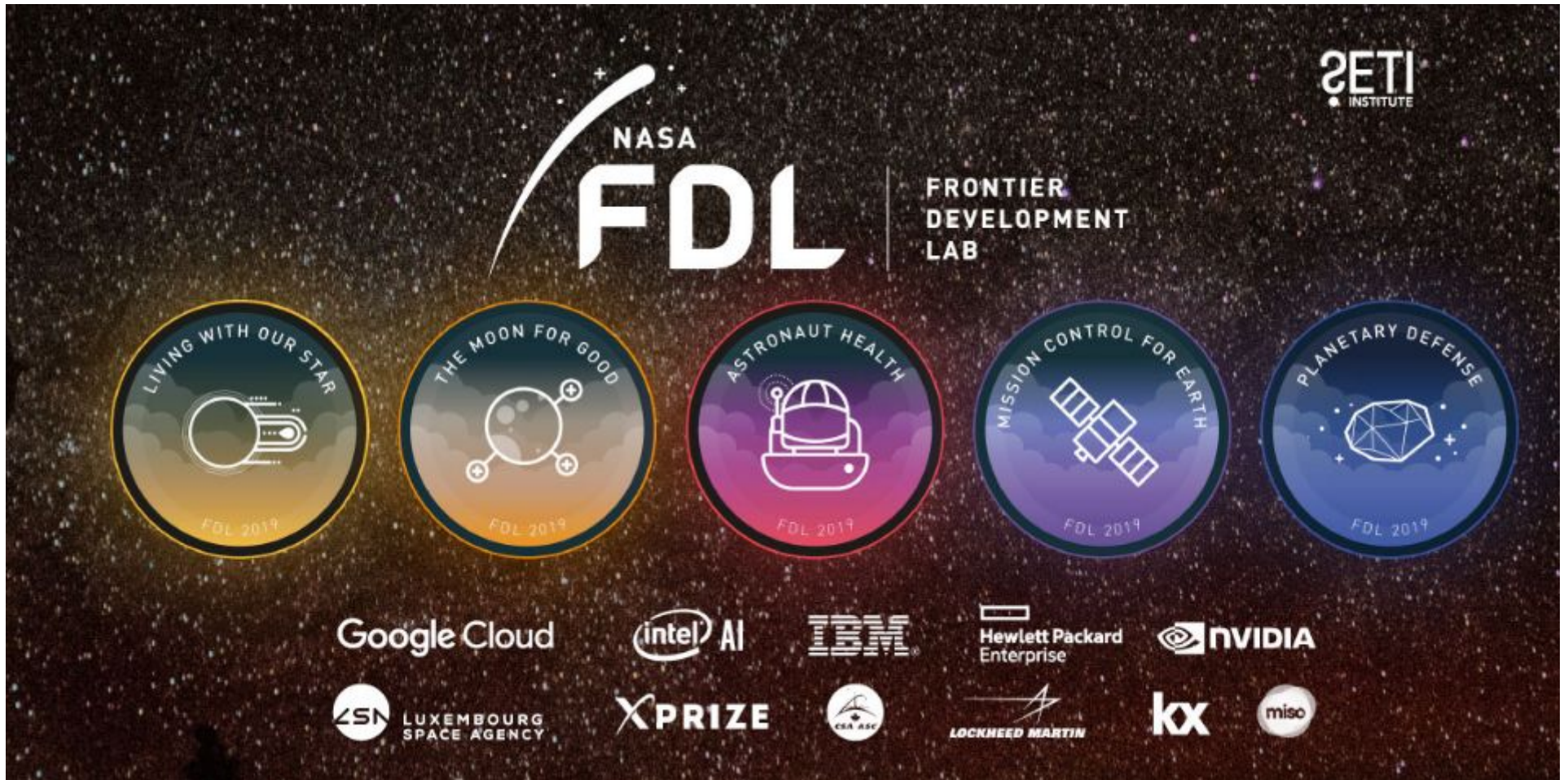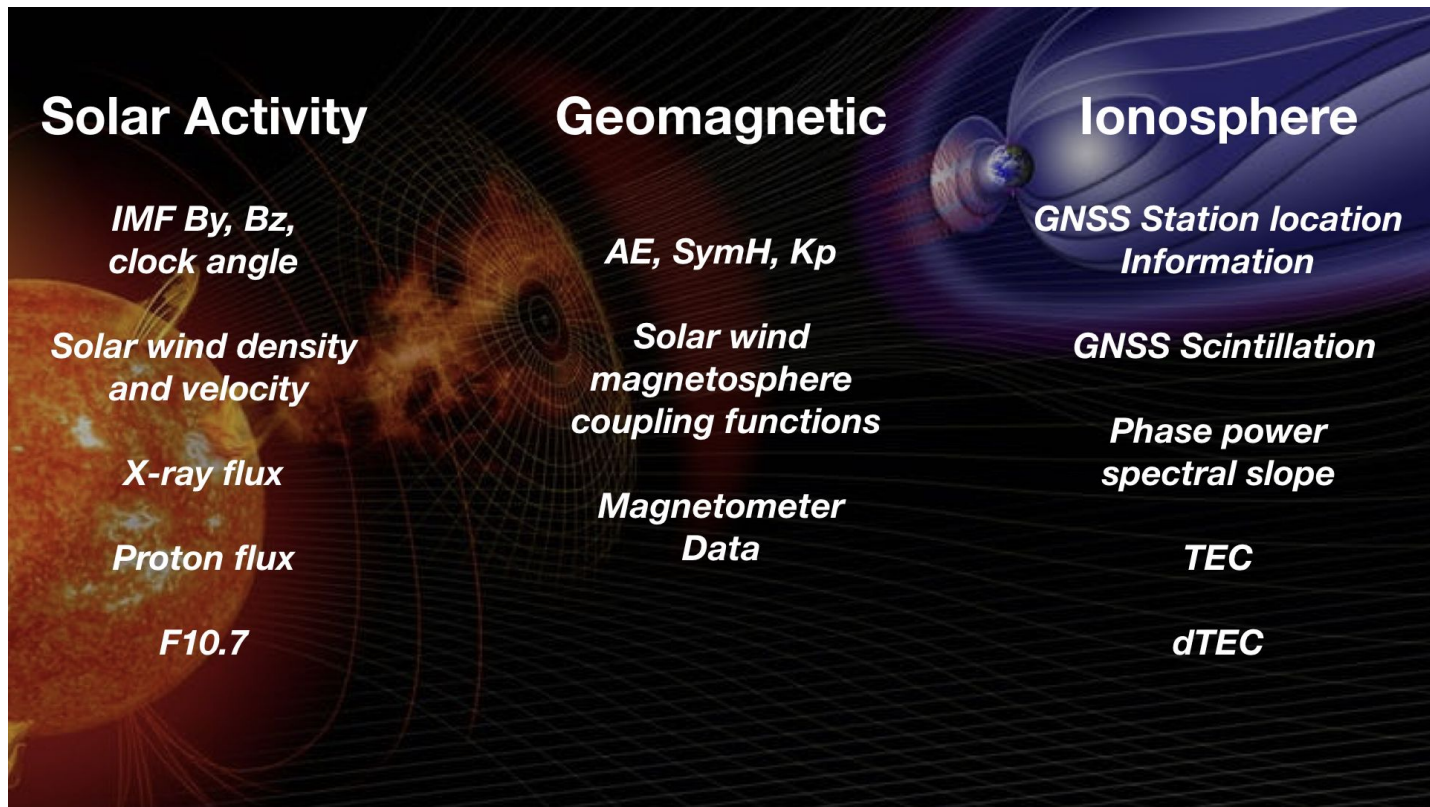# Frontier Development Lab

Asti Bhatt, SRI

What is FDL?

- An 8-week accelerator program that brings early-career Space science researchers and Machine learning practitioners from around the world, together on a common platform to solve a focused science question.
- Each team has 4 participants divided between domain and ML along with domain science mentor(s) and ML mentor(s)
- Public-private partnership, where private industry provides data and computing infrastructure for these challenges
- Funded by NASA and implemented by the SETI Institute

frontierdevelopmentlab.org

Space Weather Challenge - 1

Building a predictive model GNSS scintillations using inputs from solar activity, magnetospheric coupling and ionosphere
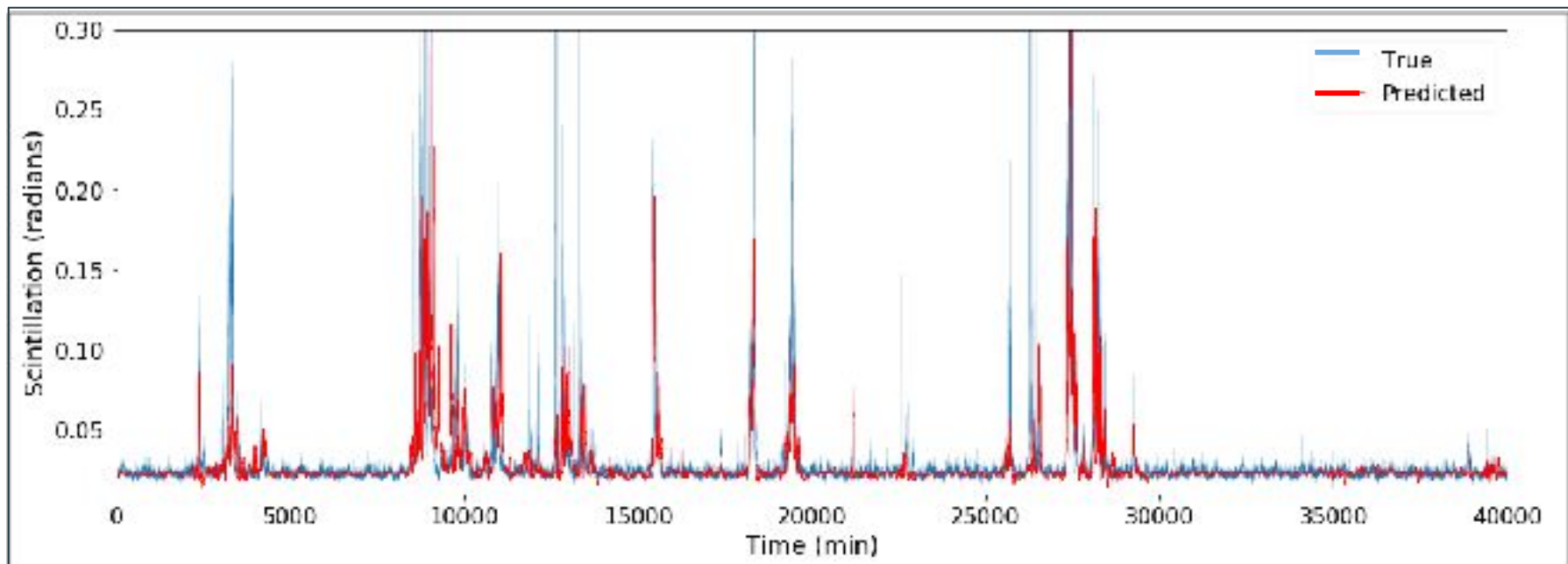

t   t + 1hr
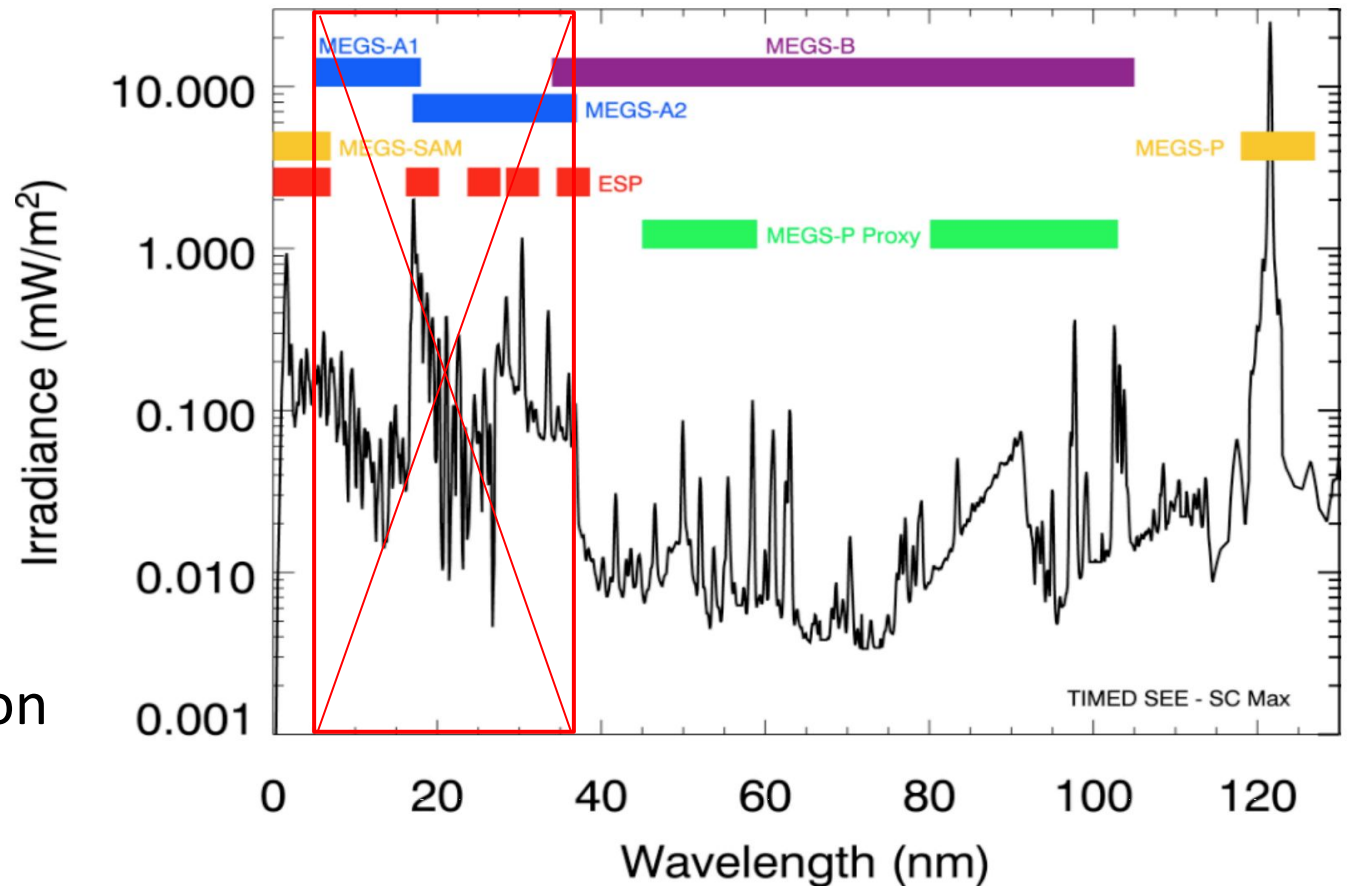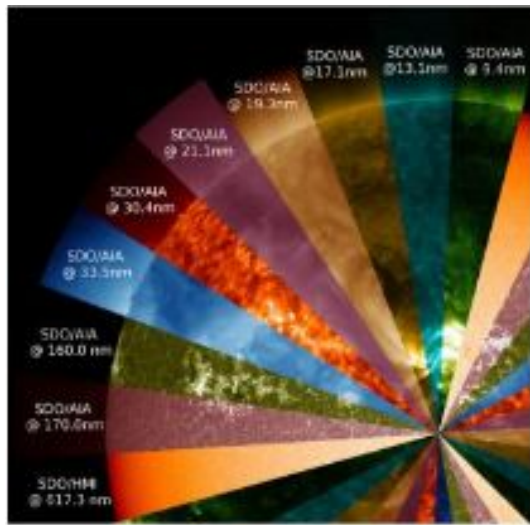
41 Input features

Predicted Scintillation

Space Weather Challenge - 1

- Baseline of ensemble classification model for all stations
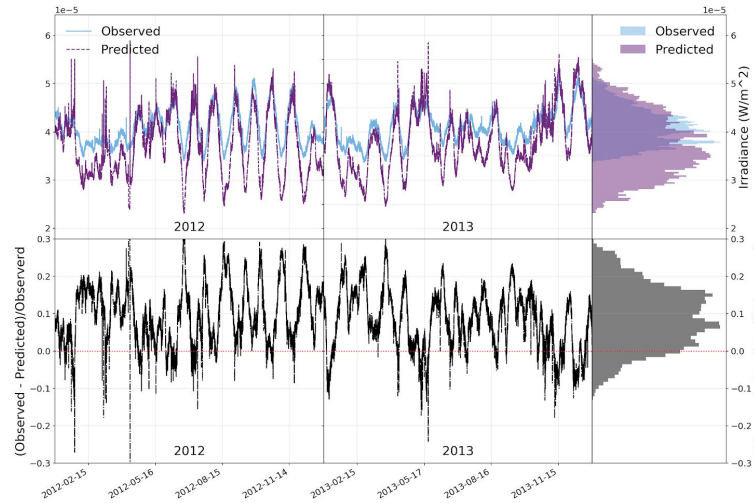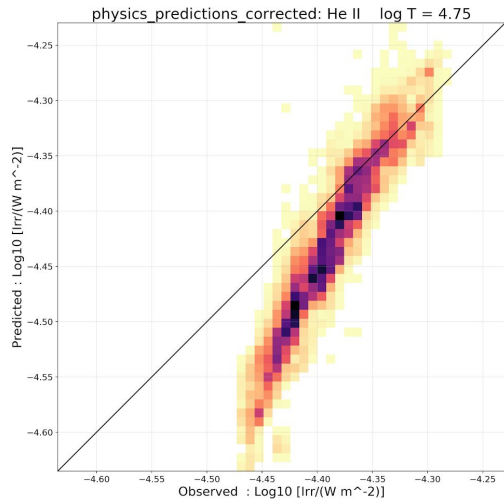- Scintillation prediction for individual station improved 70%

Space Weather Challenge - 2

MEGS-A Instrument on SDO/EVE stopped working making full EUV irradiance derivation impossible

Space Weather Challenge - 2

Physics Irradiance Model (DeepEM)

Full ML Irradiance Model