

Fire weather applications in Indonesia: GPM and forecasting

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Credit: Michael Brady

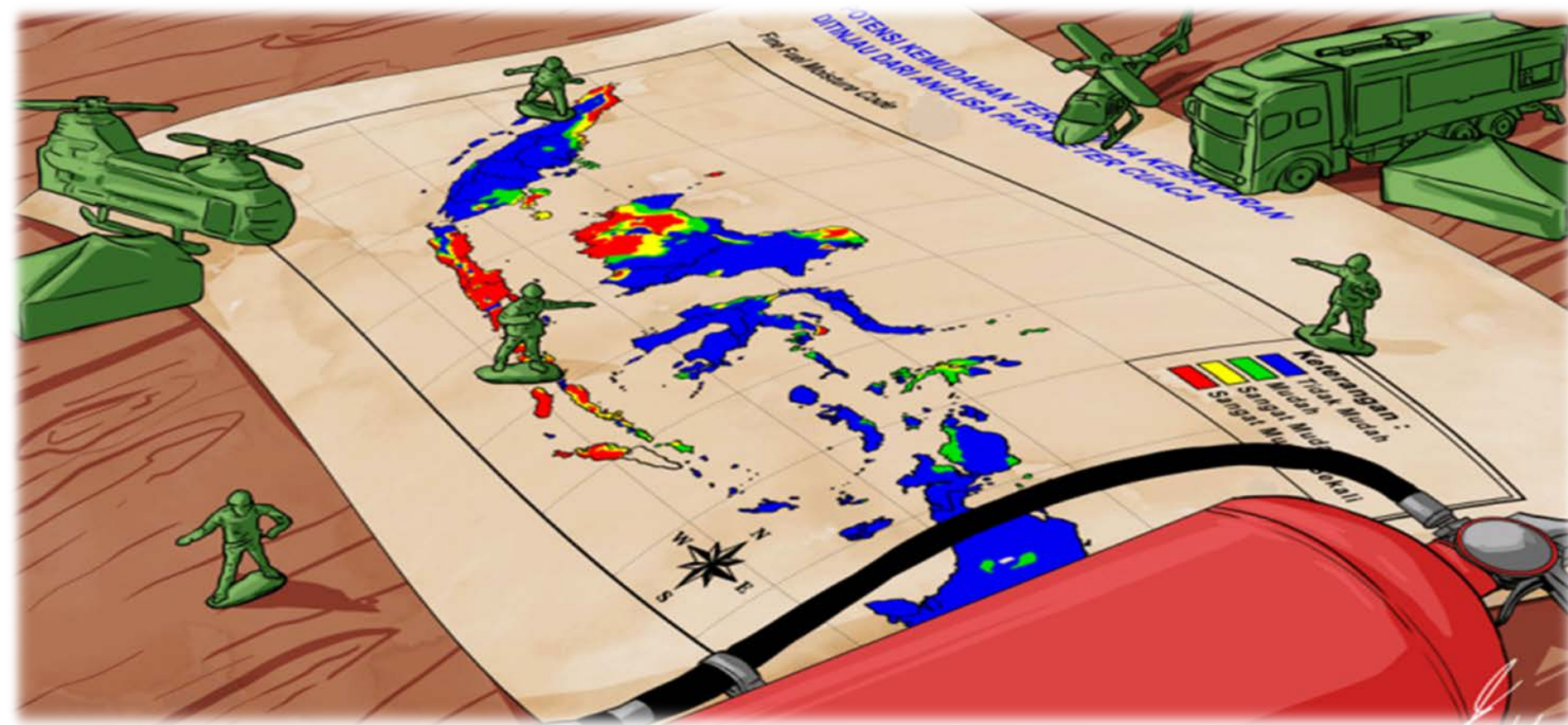
Support

NASA Precipitation Measurement Missions Science Team

NASA Modeling, Analysis and Prediction Program

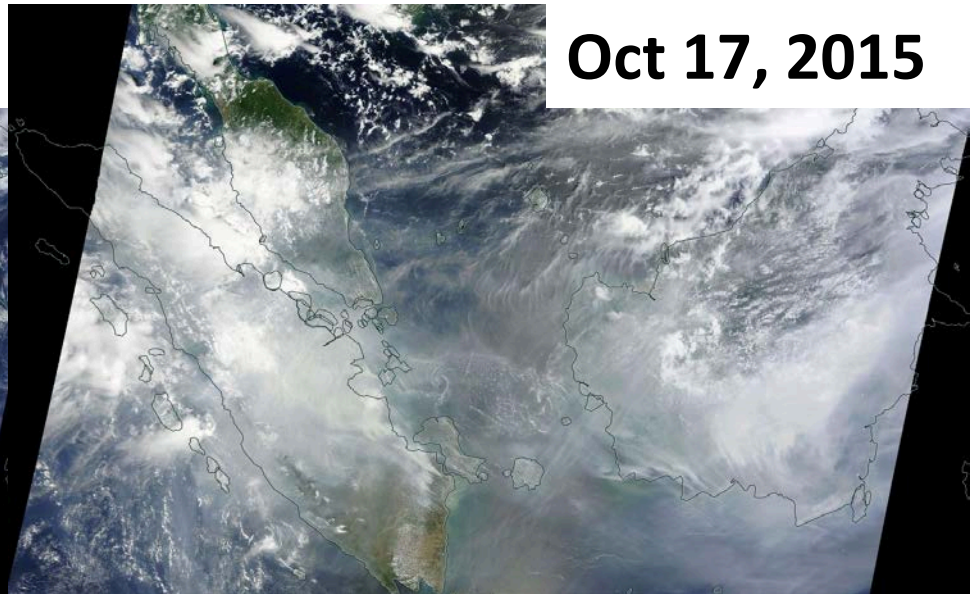
NASA Atmospheric Composition Modeling and Analysis Program

FWI enhancements in Indonesia with GPM

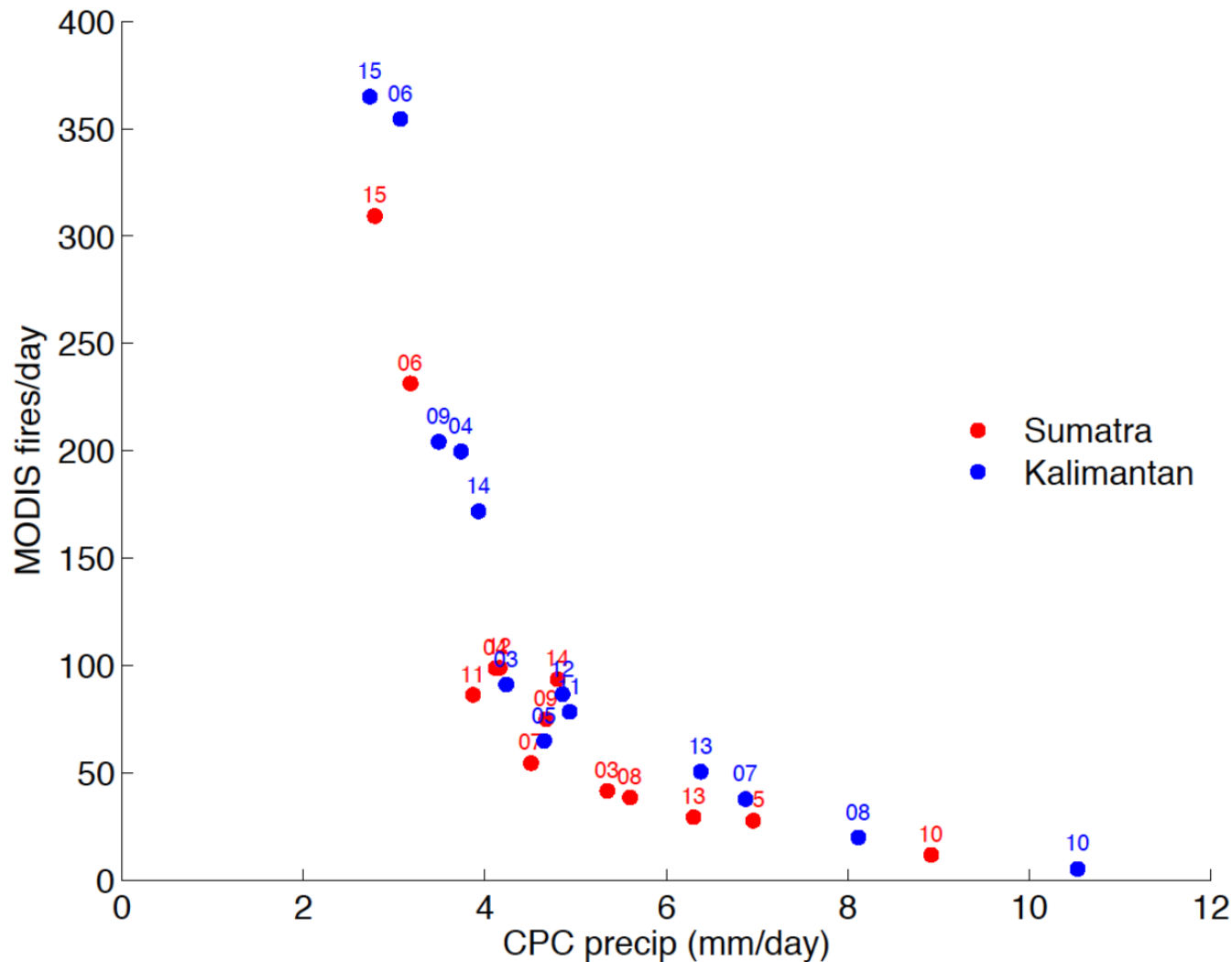


Courtesy of Dr. Israr Albar, Indonesia Ministry of Environment and Forestry

The 2015 fire season was the worst since 1997



Drought is a very strong control on fire and haze in Indonesia



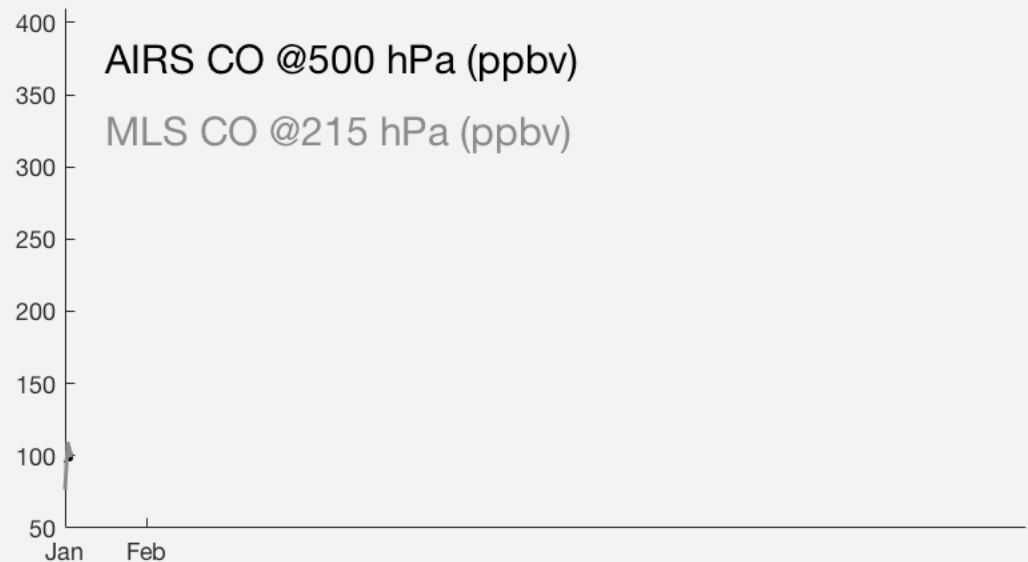
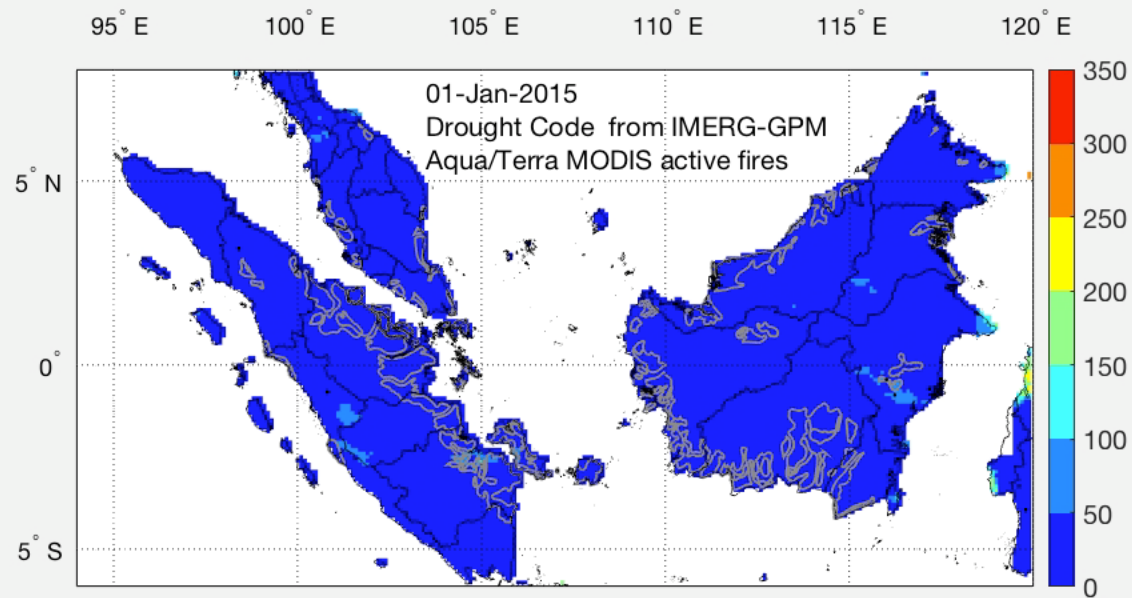
Similarly for:
MODIS AOD
OMI aerosol index
MOPITT CO
AIRS CO
MLS CO
Airport visibility

Field et al. (2016, *PNAS*)

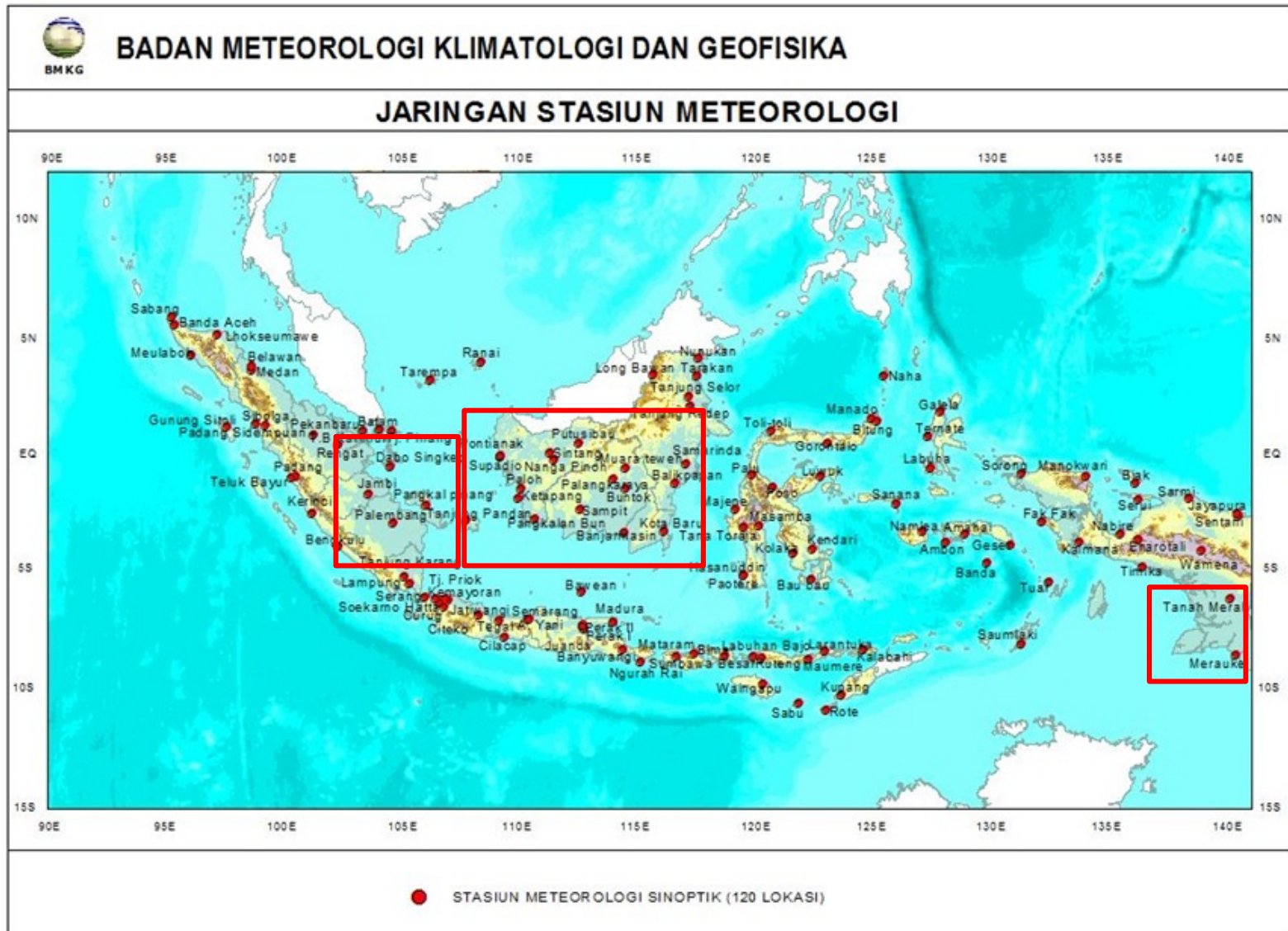
The Drought Code is used in Indonesia as an indicator of peat fire potential.

DC > 350 considered extreme (de Groot et al., 2007, *MITI*).

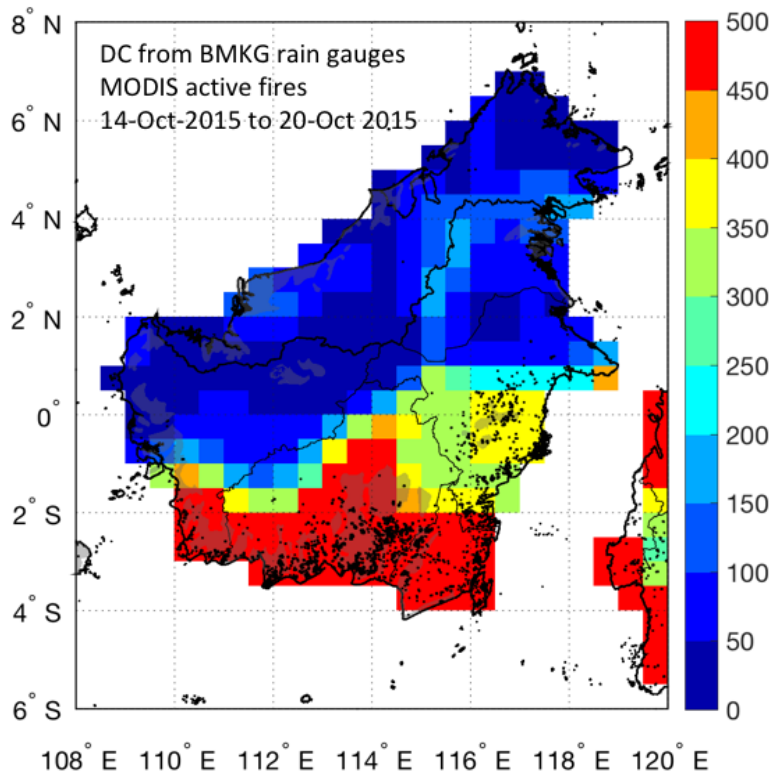
The severe haze in September and October is from peat fires under extreme DC conditions.



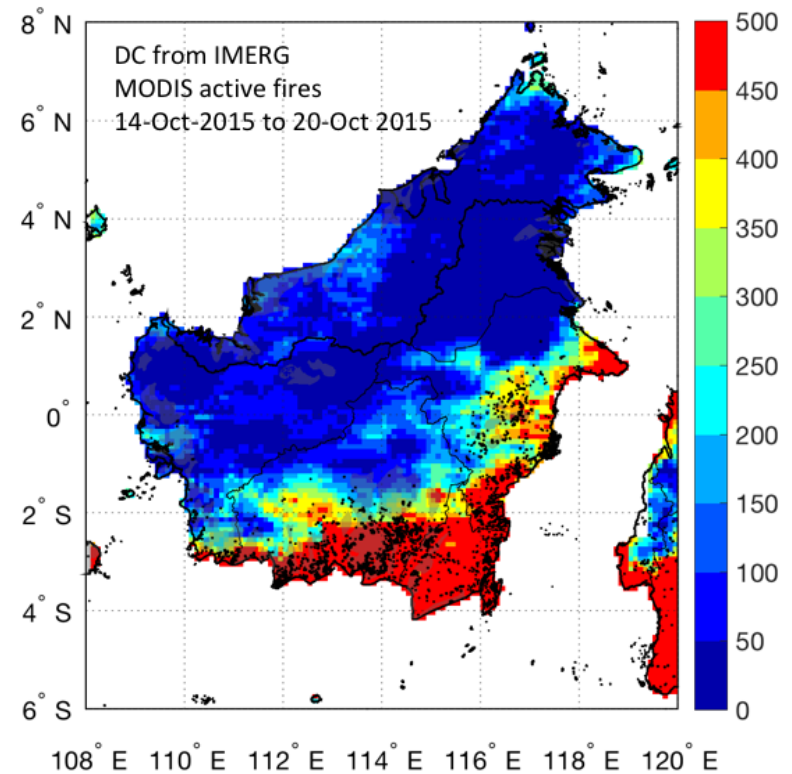
Indonesia uses the FWI system, but based on a sparse distribution of surface weather stations in fire-prone regions.



We will work with the Indonesian Agency for Meteorology, Climatology and Geophysics to enhance their operational FWI System with IMERG precipitation.



Drought Code using rain gauges



Drought Code using IMERG

We will work with government and academic partners to incorporate IMERG-based FWI products into decision aids.

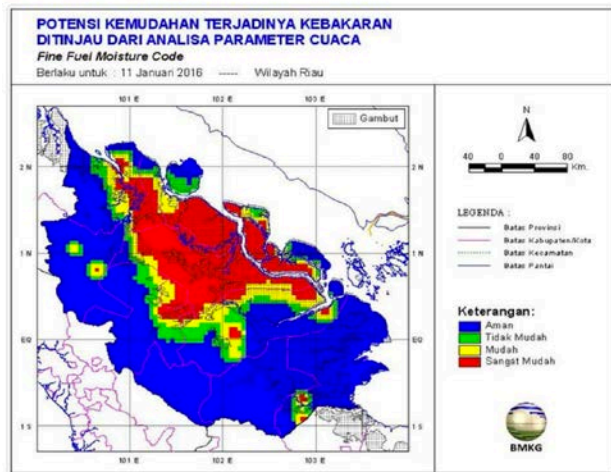


Sutopo Purwo Nugroho
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Following

Awas Riau mulai berpotensi karhutla lagi. Lahan mulai kering dan sangat mudah terbakar
11-1-2016.

Translate from Indonesian



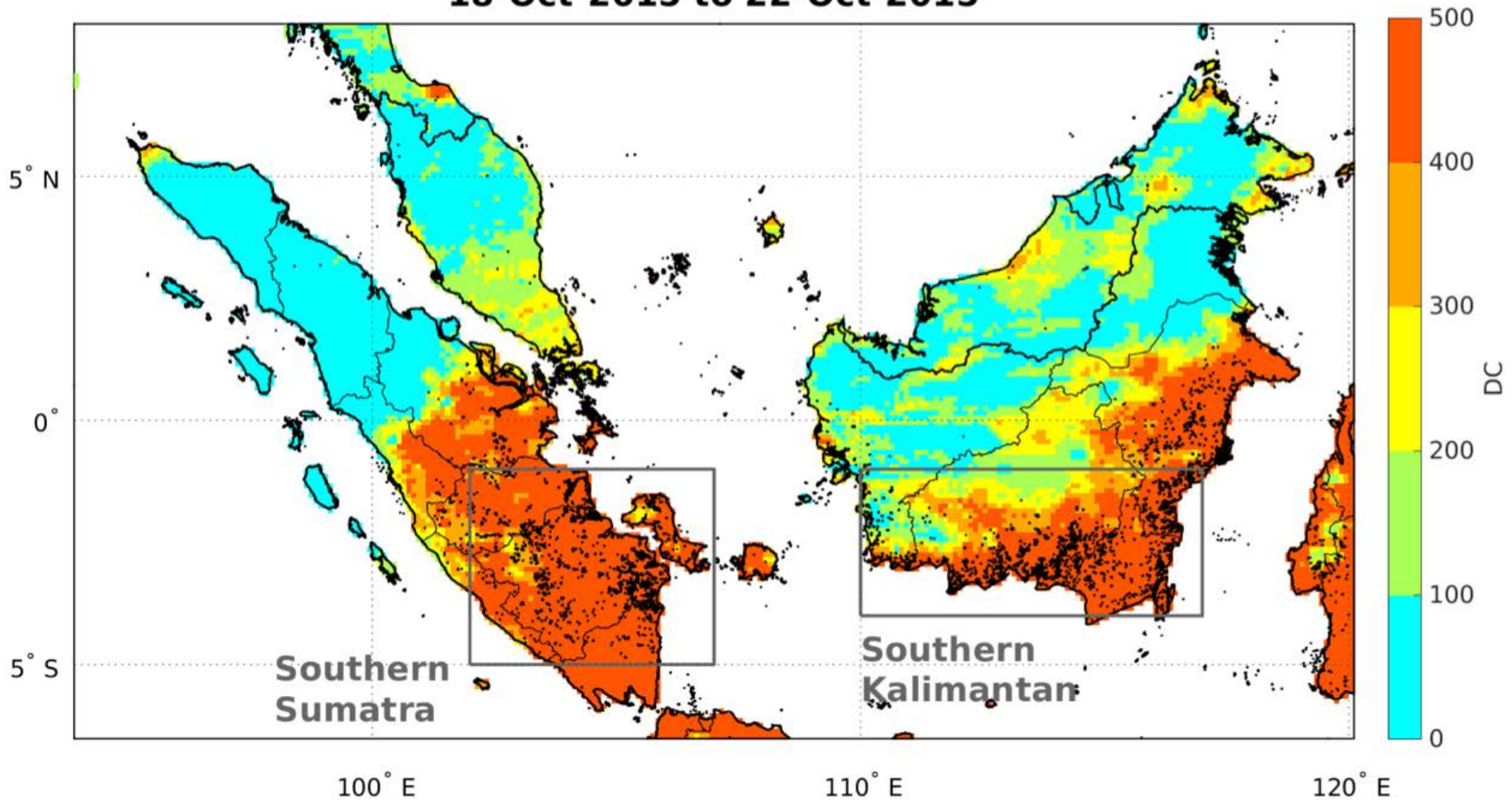
How far ahead could severe conditions have been predicted?

(Shawki et al., 2017, *Geophys. Res. Lett.*)

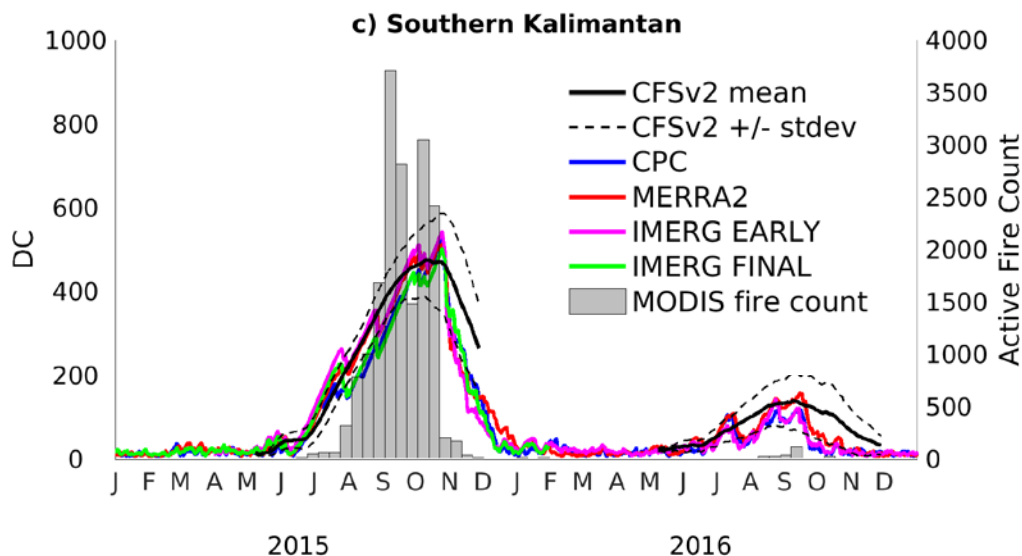


Example prediction target

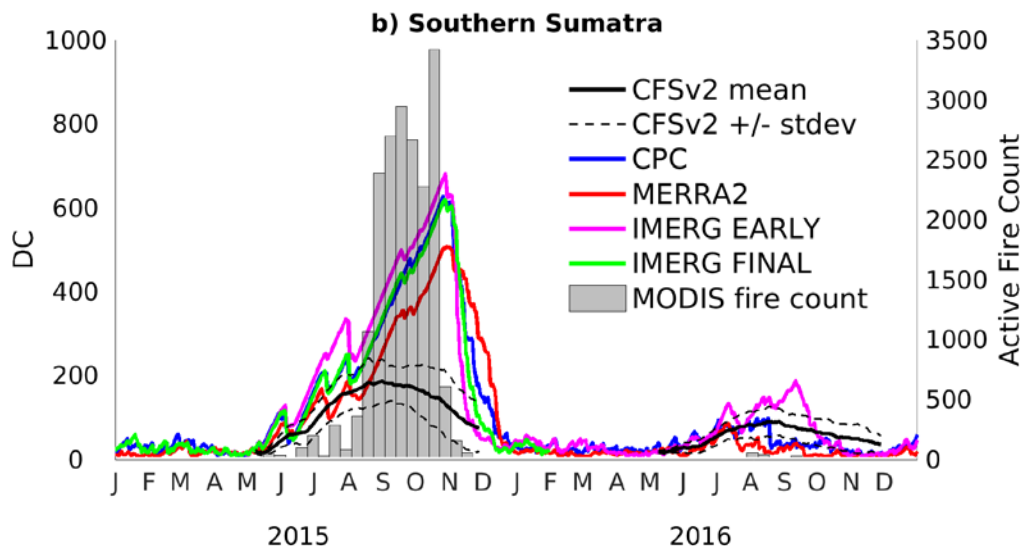
**Drought Code (DC) from IMERG
MODIS active fires
18-Oct-2015 to 22-Oct-2015**



NCEP CFSv2 DC forecasts initialized in May

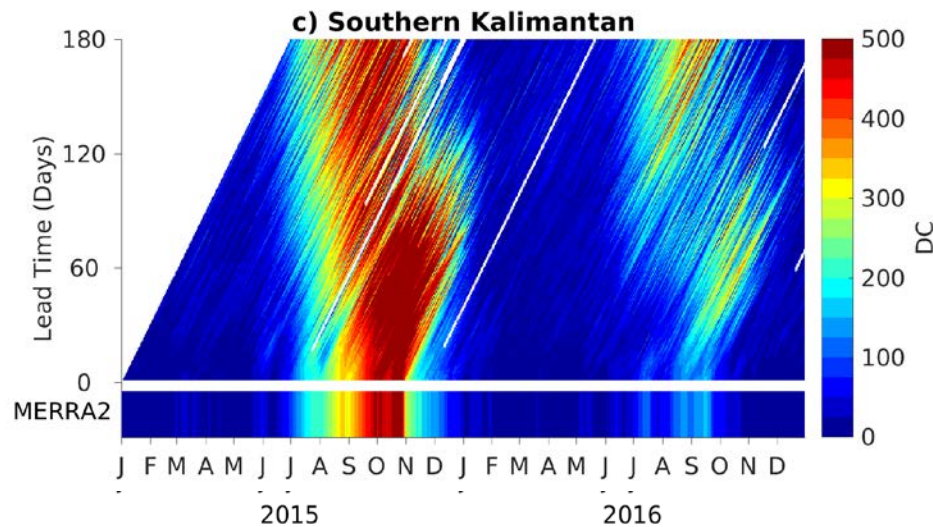


Over Kalimantan, the May forecast accurately predicted high DC in September and October.

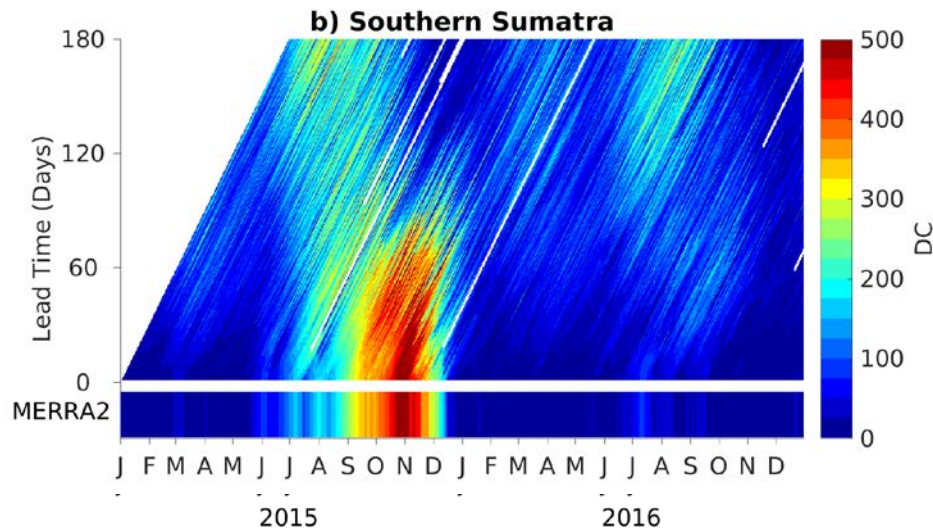


Over Sumatra, the May forecast missed the high DC entirely.

DC forecasts at different lead times



Over Kalimantan, 2015 forecasts were consistently good with 6-month lead times, other than predicting too-long drought at lead times greater than two weeks.



Over Sumatra, the forecasts became accurate with a 2-month lead time.

2017 forecast

Over Kalimantan, 2017 forecasts through May were driven by predictions of an El Niño, which did not verify.

