

## **Comments on Reid et al. “Multi-scale meteorological conceptual model of observed active fire hotspot activity and smoke optical depth in the Maritime Continent”**

Overall, this paper is a useful contribution to our understanding of the controls on fire activity in the region, in particular the discussion of detection bias and the influence of intra-seasonal and diurnal precipitation variability. I have one main point and several minor points that I suggest the authors consider.

**Role of the Indian Ocean Dipole:** My general impression from the abstract, section 4.2 and point #4 in section 10.1, is that authors are suggesting a weaker Indian Ocean Dipole influence, based on the timing of the peak in IOD index and fire activity. In that regard, an important study to consider is that of Hong, Lu, and Kanamitsu [2008, JGR], in addition to the supplementary material of Field et al. [2009]. Hong et al. constructed composite maps of precipitation and 850 mb circulation over Asia, for different combinations of positive and negative IOD, El Nino, and La Nina conditions during 1948 – 2002 (see their Figure 1). During JJA, the strongest negative precipitation anomalies occurred under combined El Nino and positive IOD conditions. Results were similar for SON (C.C. Hong, pers. comm). Particularly over Sumatra, precipitation anomalies were weak during El Nino-only conditions. Although the Hong et al. study is not considering the precise timing of precipitation onset, which was of interest here, it seems important, that with a substantially longer record, the IOD is an important additional factor influencing precipitation in western Indonesia.

### **Minor points**

- P3L12 “IOP” to “IOD”
- P6L21: should ‘stack and burn’ be ‘slash and burn’?
- P5L1 – I would avoid the lightning connection in a fire context. In Hamid et al. [2001], the El Nino-increased lightning is in March 1998, after the main fires had stopped. There were large, localized fires in East Kalimantan in March 1998, but that area was largely lightning-free. Any mention of lightning might suggest that it was a cause of the fires, which, in the absence of strong evidence, could be a distraction.
- P16L24, P19L13 – It would be worth mentioning that Riau province has recently been subject to Indonesia’s most intensive deforestation [Hansen, Stehman et al., 2008, PNAS]. This might be an area where the human influence over fire activity is dominating the meteorological influence.
- P35L18 – “Sarawat” to “Sarawak”

### **References**

Hong, C. C., M. M. Lu, and M. Kanamitsu (2008), Temporal and spatial characteristics of positive and negative Indian Ocean dipole with and without ENSO, *J. Geophys. Res. (Atmos.)*, 113(D8), doi:10.1029/2007JD009151.

Hansen, M. C., et al. (2008), Humid tropical forest clearing from 2000 to 2005 quantified by using multitemporal and multiresolution remotely sensed data, *Proc. Natl. Acad. Sci. USA*, 105(27), 9439-9444.