BAMS Supplement

S2S Prediction in GFDL SPEAR

MJO Diversity and Teleconnections

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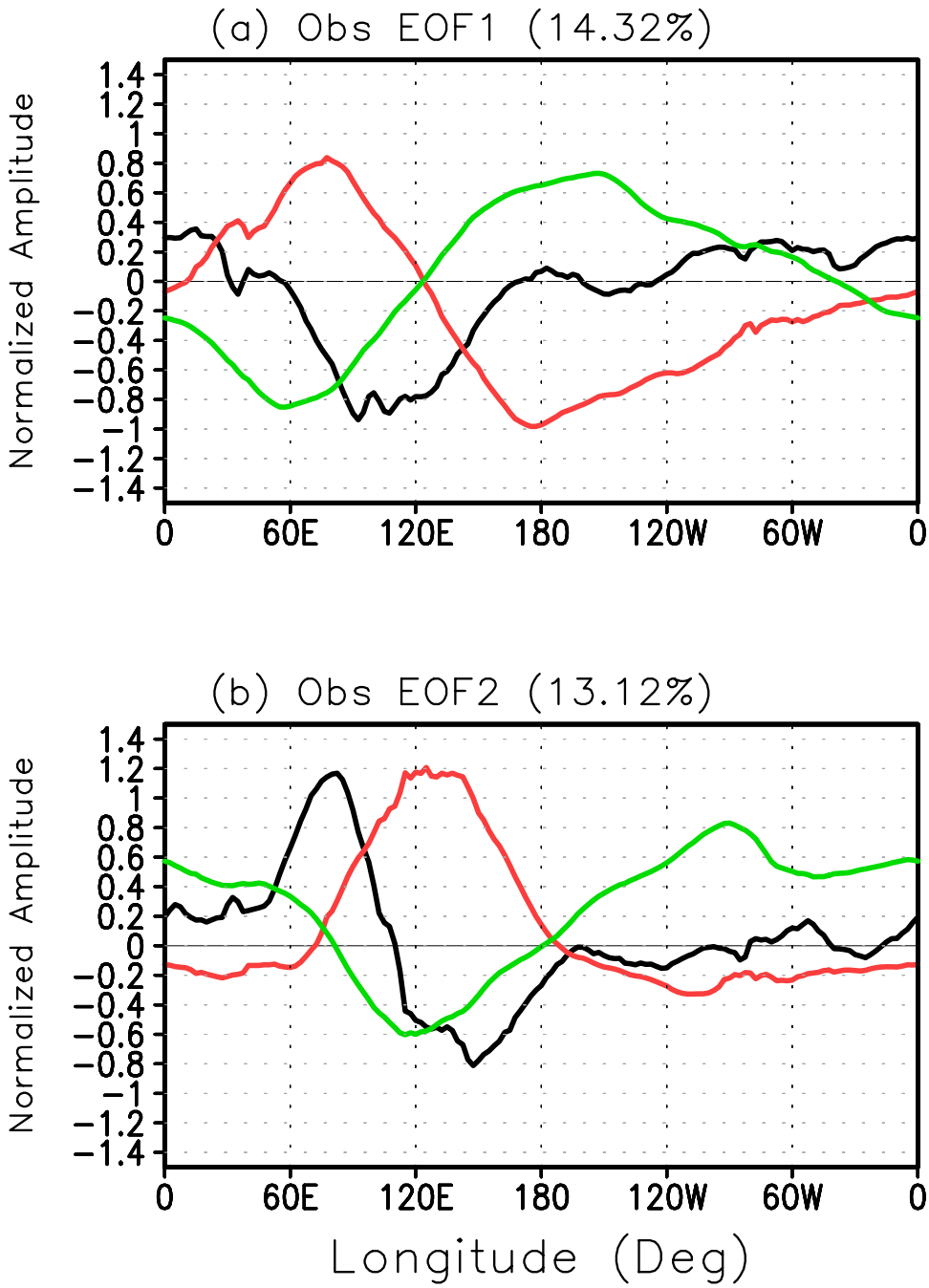

Fig. ES1. The (a) first and (b) second EOF modes of combined fields of observed outgoing longwave radiation (OLR), 850-hPa zonal wind (red), and 200-hPa zonal wind (green). Here we used the NOAA OLR data and ERA5 analysis wind data.

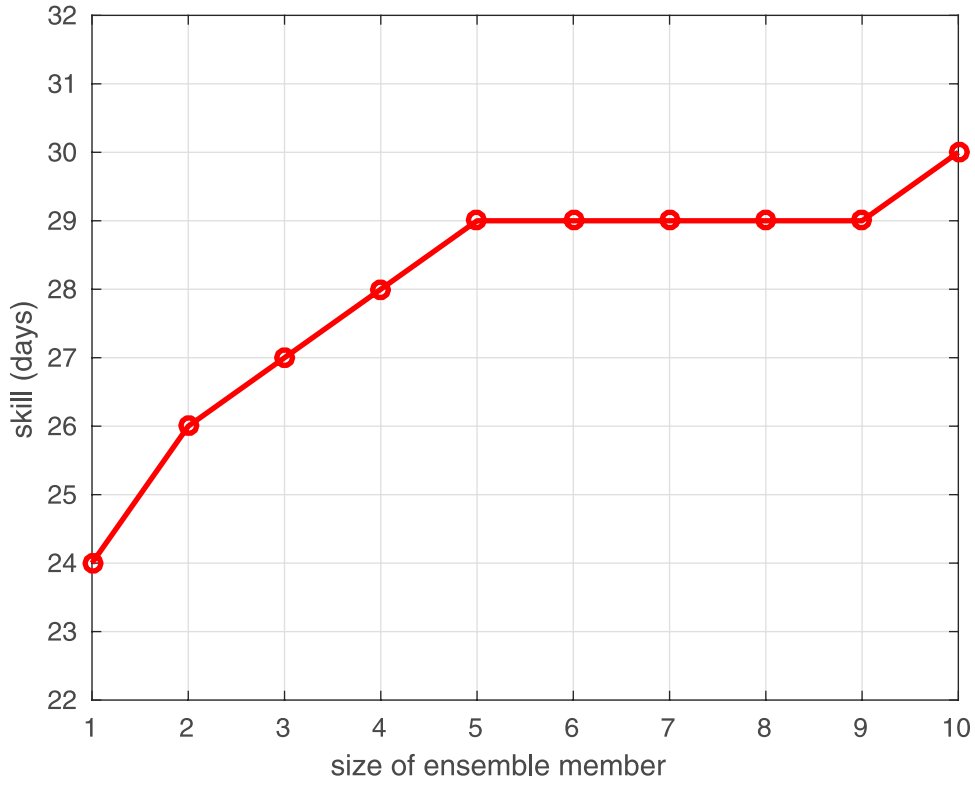

Fig. ES2. The MJO prediction skill as a function of ~~the size of ensemble members~~.

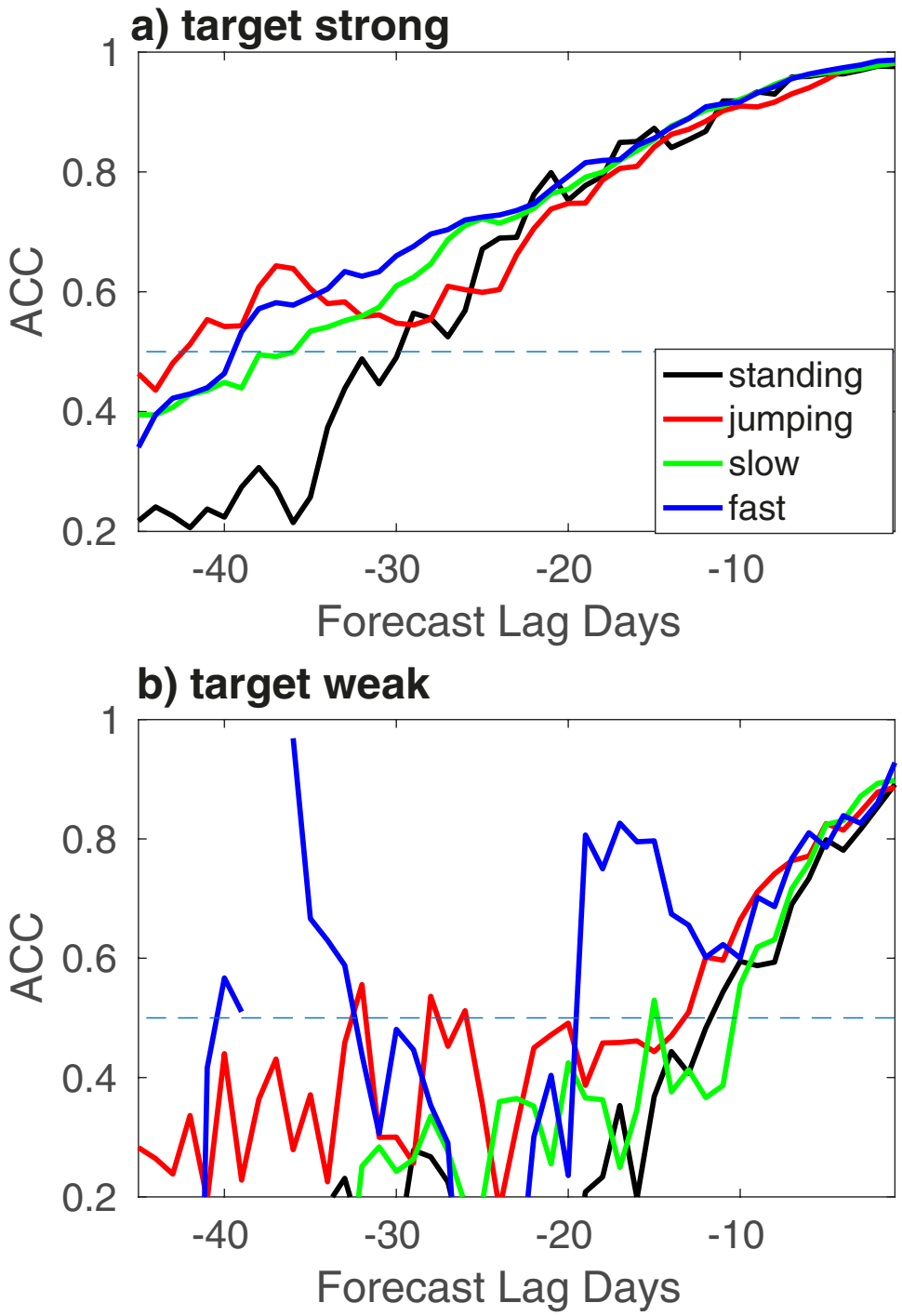

Fig. ES3. Skill dependence on the (a) target strong and (b) target weak MJO for four types of MJO.

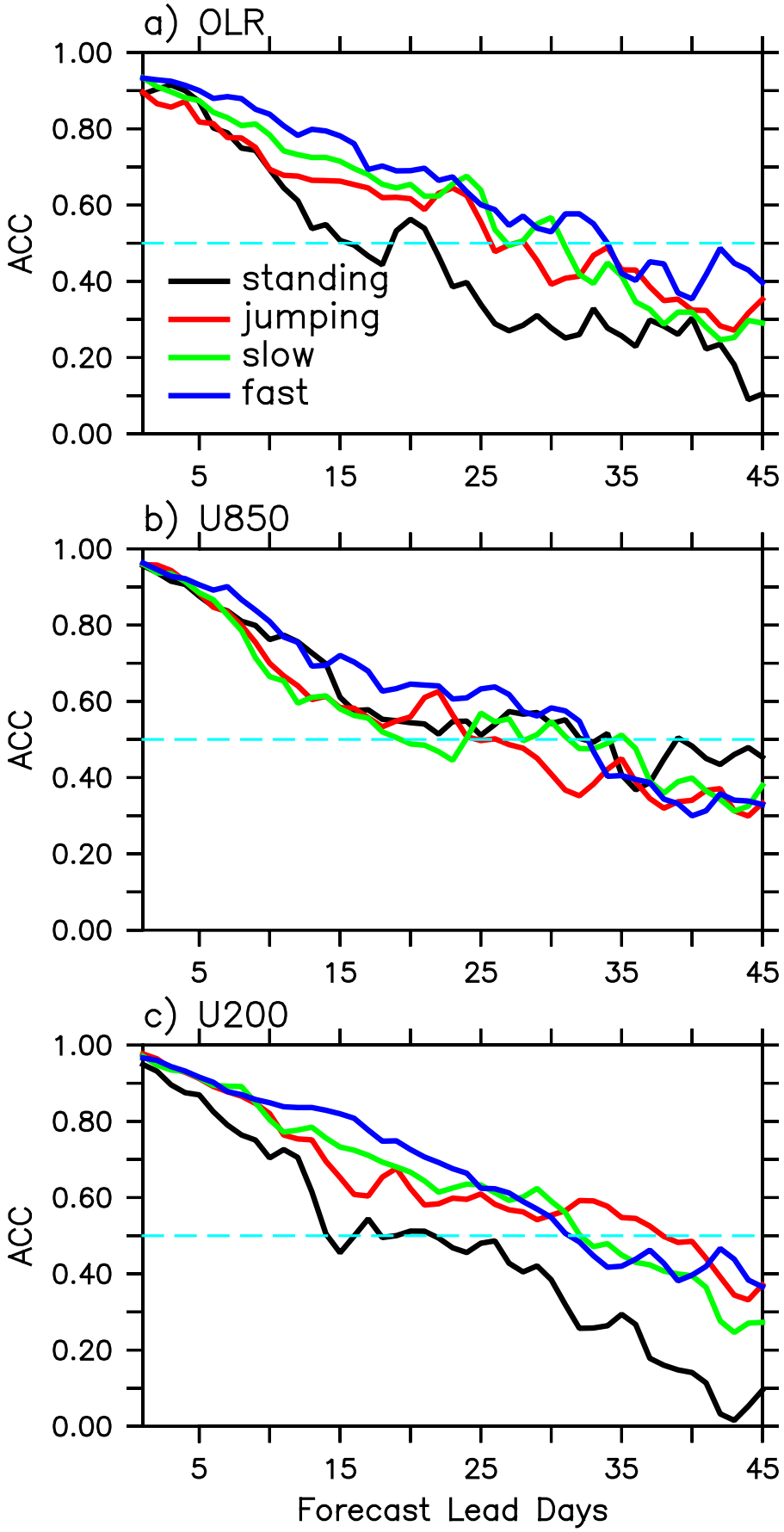

Fig. ES4. Prediction skill of convection and circulation anomalies in the Indian Ocean for four types of MJO. Correlation skill of domain-averaged (a) OLR anomalies (60°–110°E, 10°S–10°N), (b) U850 anomalies (50°–100°E, 10°S–10°N), and (c) U200 anomalies (50°–100°E, 10°S–10°N).

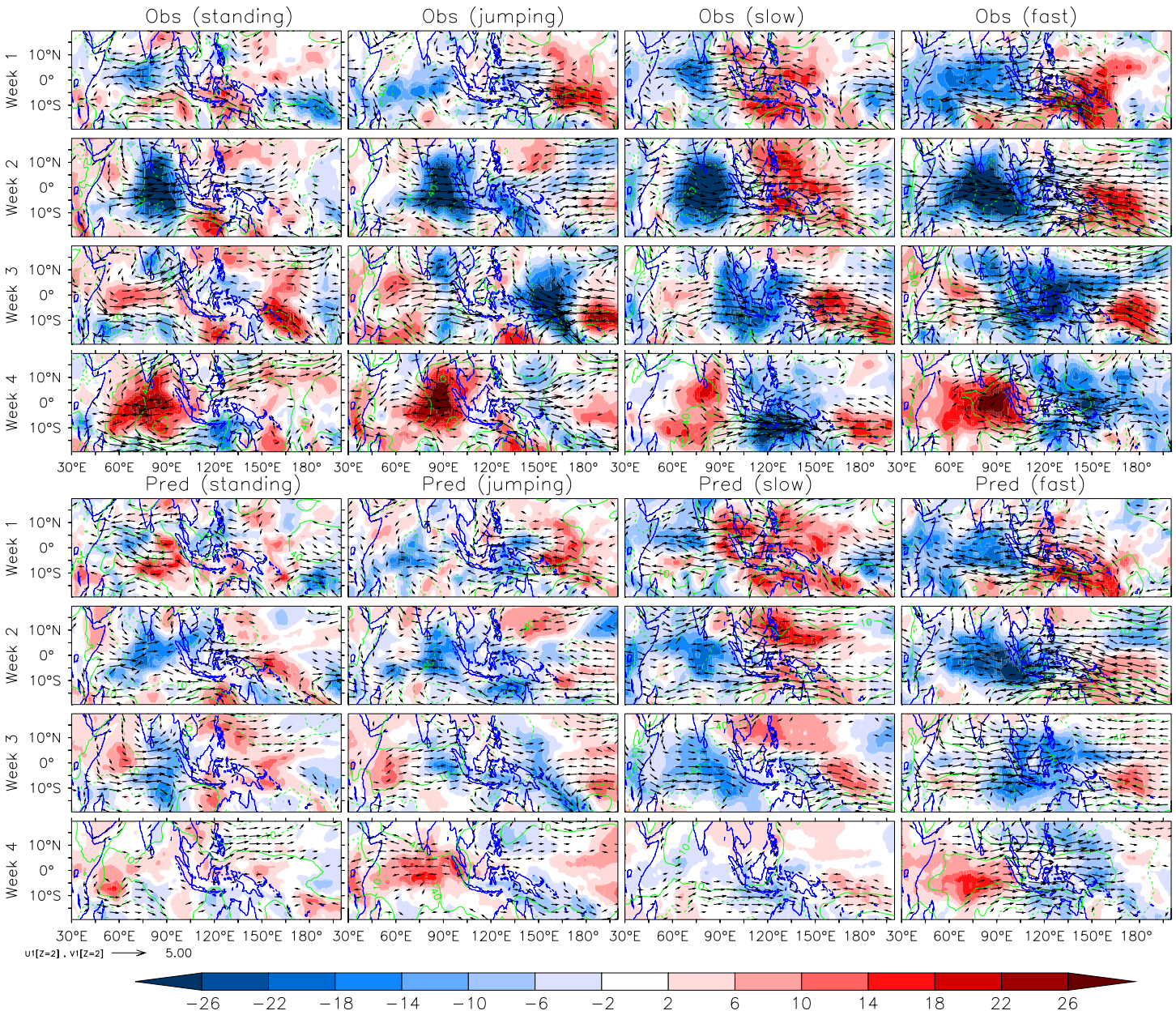

Fig. ES5. As in Fig. 7, but for observations and forecast initiated at day –10.

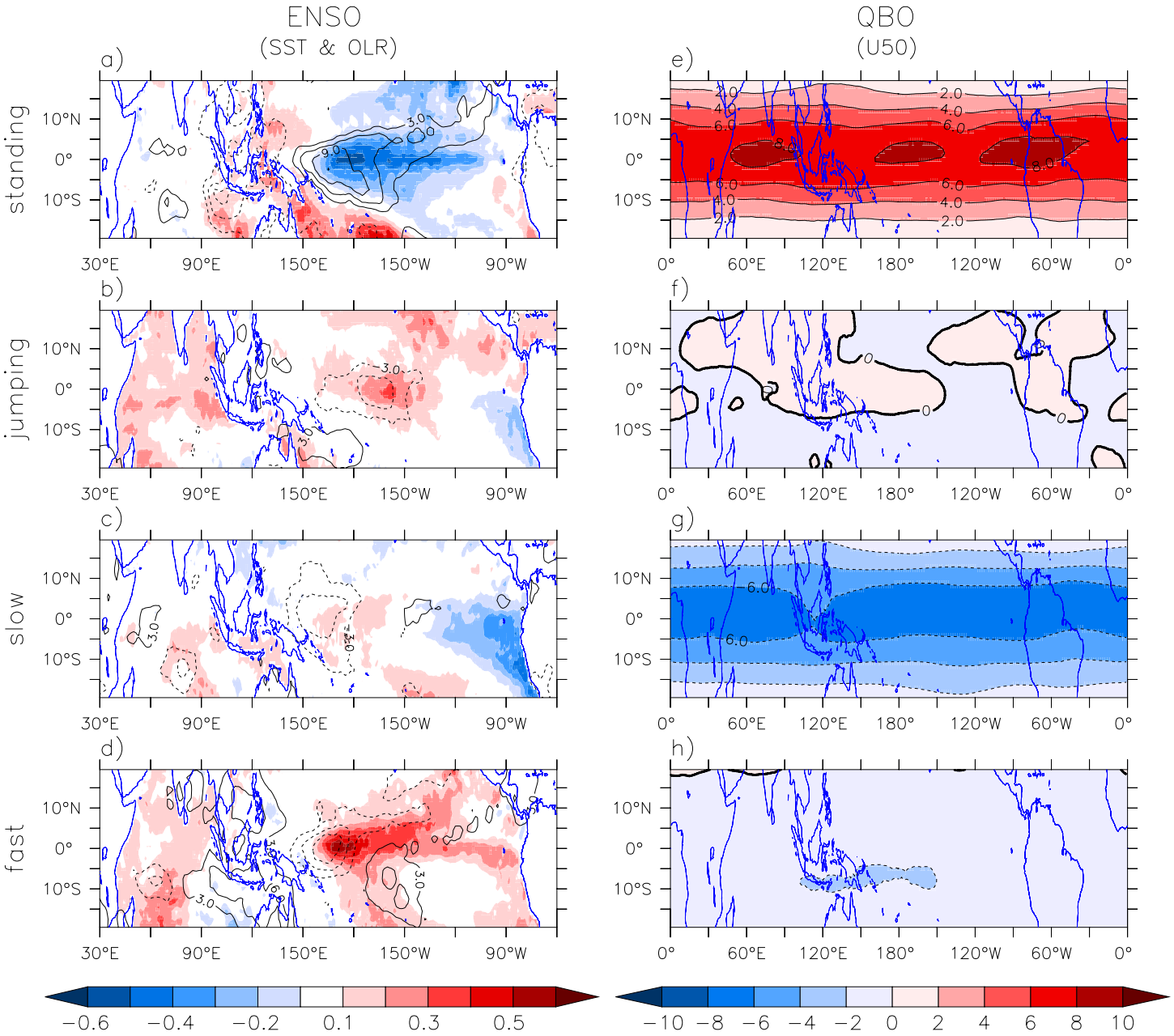

Fig. ES6. As in Fig. 8, but for model prediction.

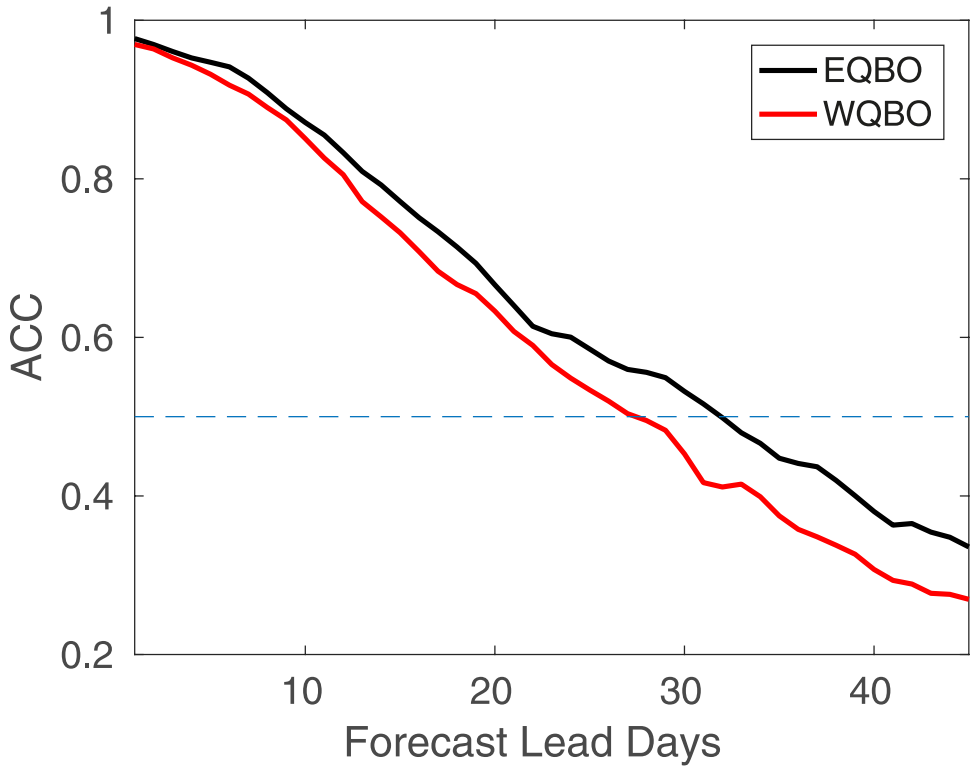

Fig. ES7. MJO prediction during the easterly phase of QBO (QBOE) and westerly phase of QBO (QBOW). The QBO index is defined using the ERA5 monthly mean zonal-mean zonal wind at 50 hPa (U50) averaged over 10°S–10°N during November–April (NDJFMA). The QBOW and QBOE events are selected when the NDJFMA averaged U50 anomaly is greater than or less than 0.5 standard deviation, respectively. There are seven QBOE events (2001/02, 2003/04, 2005/06, 2007/08, 2012/13, 2014/15, 2018/19) and eight QBOW events (1999/2000, 2002/03, 2004/05, 2006/07, 2008/09, 2010/11, 2013/14, 2016/17). The hindcasts are selected when its initial date are from 1 November to 20 April so that there are totally 240 and 261 cases for QBOE and QBOW, respectively.