

Supplementary Materials: Impact of warmer eastern tropical Pacific SST on the March 2015 Atacama floods, *Mon. Wea. Rev.*, 2016

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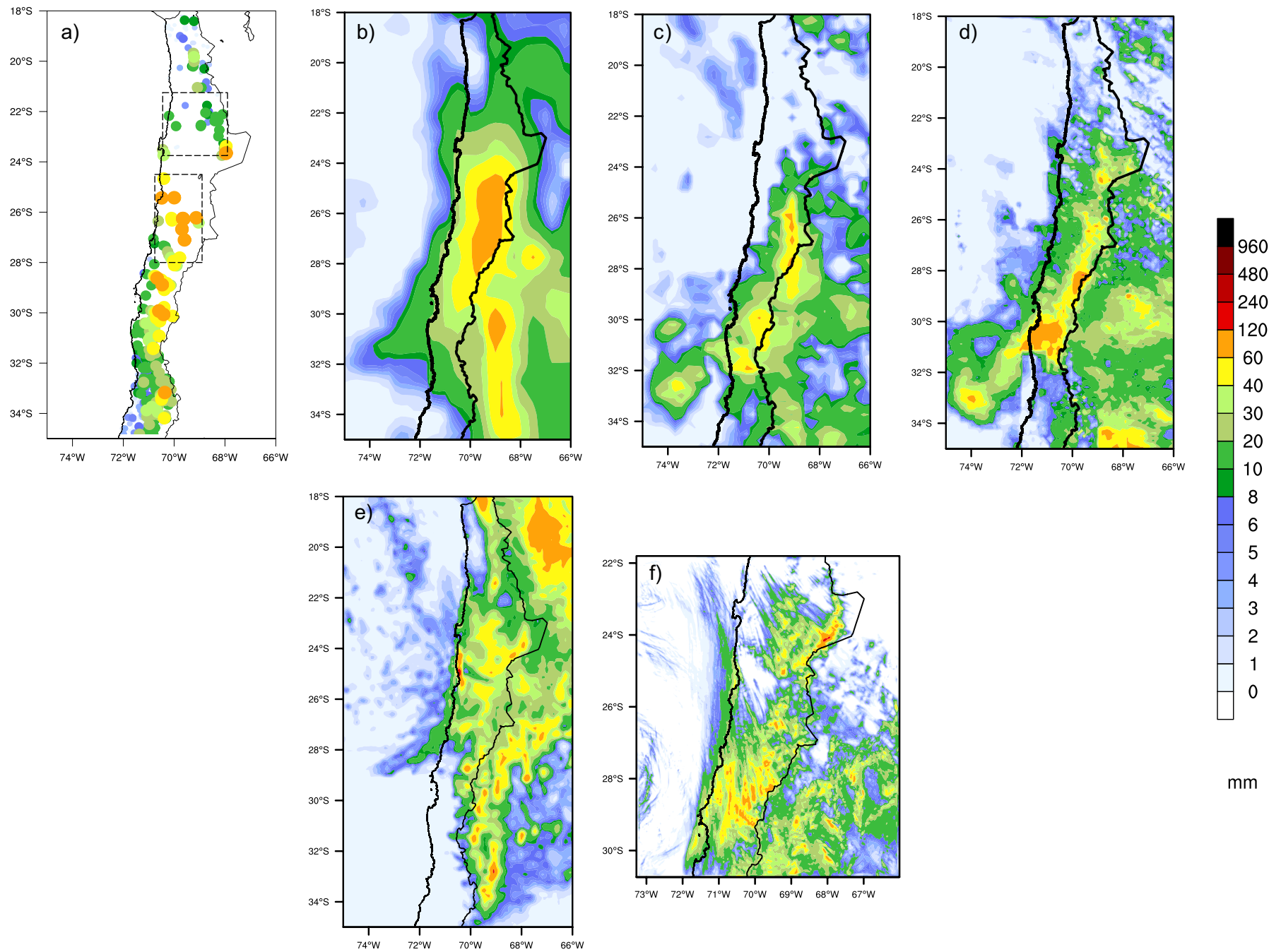


Fig. S1. 3-day (24-25-26 March 2015) accumulated precipitation (mm) for (a) surface observations, (b) ERA-INT Reanalysis, (c) TRMM (3B42.V7), (d) GPM (IMERG), (e) RegCM4 and (f) WRF.

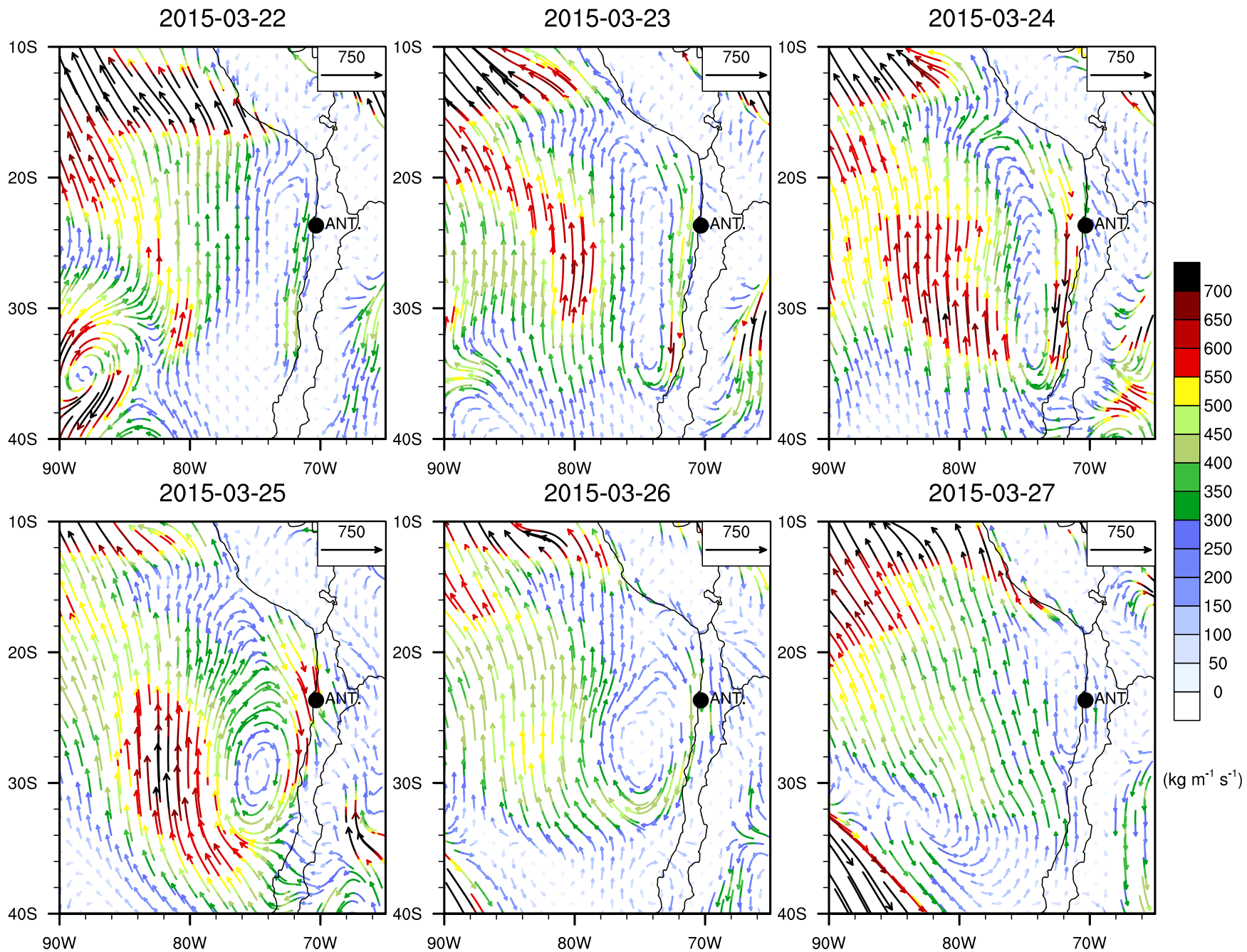


Fig. S2. ERA-Int Reanalysis of vertically integrated moisture flux (700-900 hPa) between 22 March and 27 March 2015. Marker corresponds to location of Antofagasta.

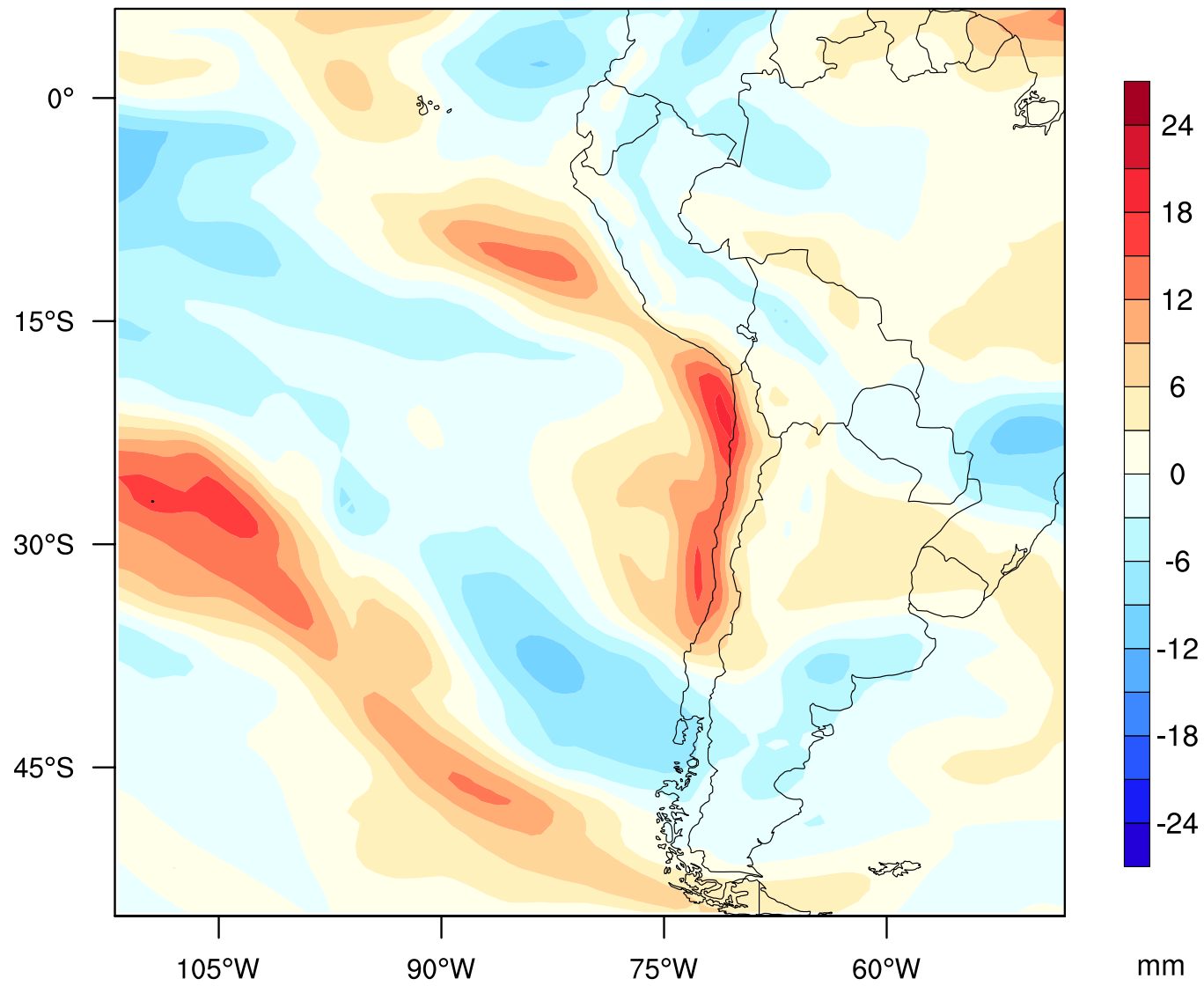


Fig. S3. 3-day averaged (24-25-26 March 2015) precipitable water anomaly (mm) with respect to 3-day averaged climatology (24-25-26 March 1980-2015).

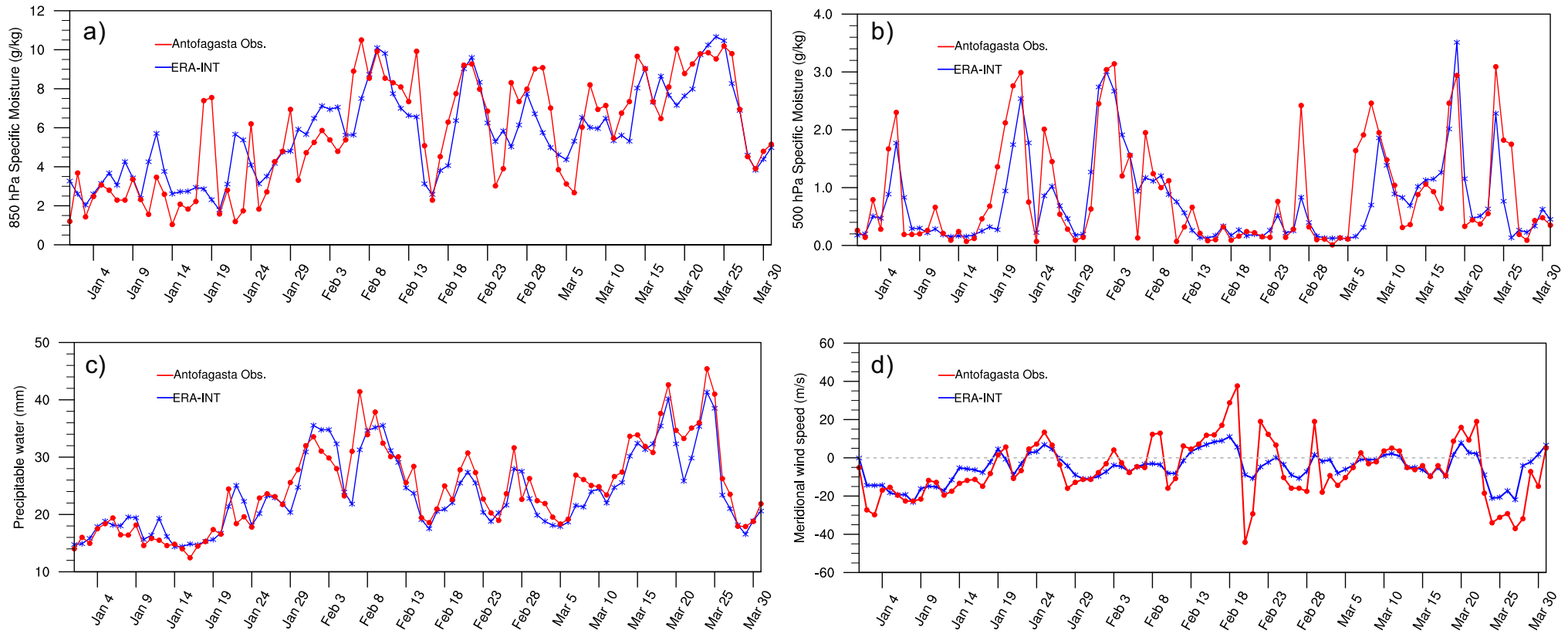


Fig. S4. (a) Daily time series of 850 hPa specific moisture (g/kg), (b) 500 hPa specific moisture (g/kg), (c) precipitable water (mm) and (d) 300 hPa meridional wind speed (m/s) of sounding data and ERA-INT Reanalysis over Antofagasta between 1 January and 31 March 2015.

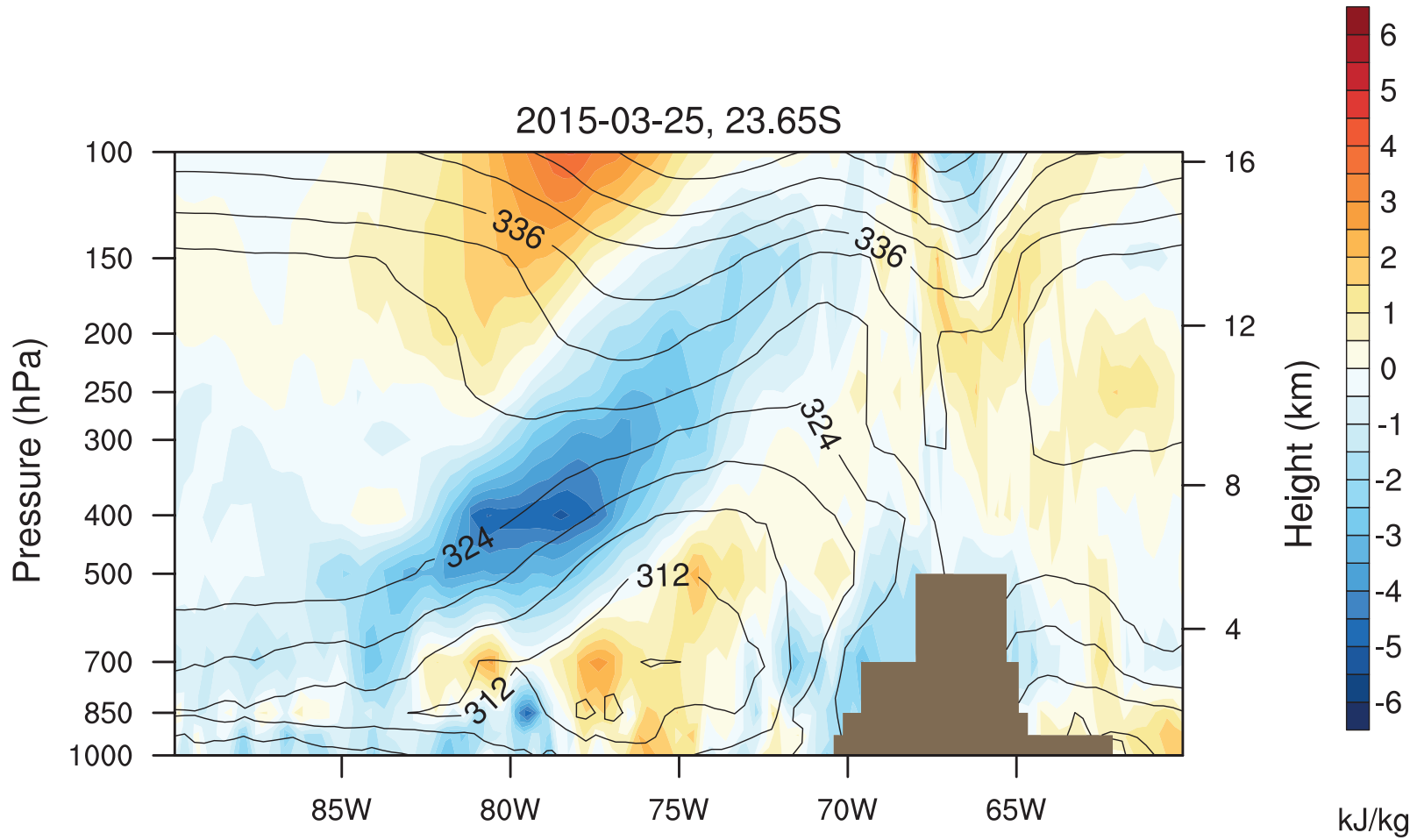


Fig. S5. Longitude-pressure diagram at 23.65°S of moist static energy differences (shaded, kJ/kg) between sensitivity simulation and control simulation for 25 March 2015. Also included is the contour lines for control simulation moist static energy values (kJ/kg).

Table S1. Summary of spatially-averaged 3-day accumulated precipitation values over two boxes in Northern Chile based on the observation, ERA-INT, TRMM (3B42.V7) GPM (IMERG) and numerical simulations (RegCM4 and WRF).

	Observed (mm)	ERA-INT & (Bias) (mm)	TRMM & (Bias) (mm)	GPM & (Bias) (mm)	RegCM4 & (Bias) (mm)	WRF & (Bias) (mm)
<i>Copiapo (28S-24.5S)</i>	38.9	55.1 (16.2)	16.9 (-22)	20.1 (-18.8)	32.3 (-6.6)	37.2 (-1.7)
<i>Antofagasta (24S-21.5S)</i>	15.1	19.3 (4.2)	1.2 (-13.9)	8.3 (-6.8)	20.5 (5.4)	11.1 (-4)

Table S2. Summary of evaluation of ERA-Interim Reanalysis against sounding observation over Antofagasta for 3-months (January to March) of 2015.

	PCW	300 hPa Meridional Wind	500 hPa Specific Moisture	850 hPa Specific Moisture
<i>RMSE</i>	2.95 (mm)	9.93 (m/s)	0.56 (g/kg)	1.74 (g/kg)
<i>Spearman Rank Corr. Coeff.</i>	0.93	0.83	0.76	0.79
<i>Mean Bias</i>	-0.93 (mm)	1.01 (m/s)	-0.11 (g/kg)	-0.11 (g/kg)