

1 **Comparisons of the tropospheric specific humidity from GPS radio occultations with**
2 **ERA–Interim, NASA MERRA and AIRS data**

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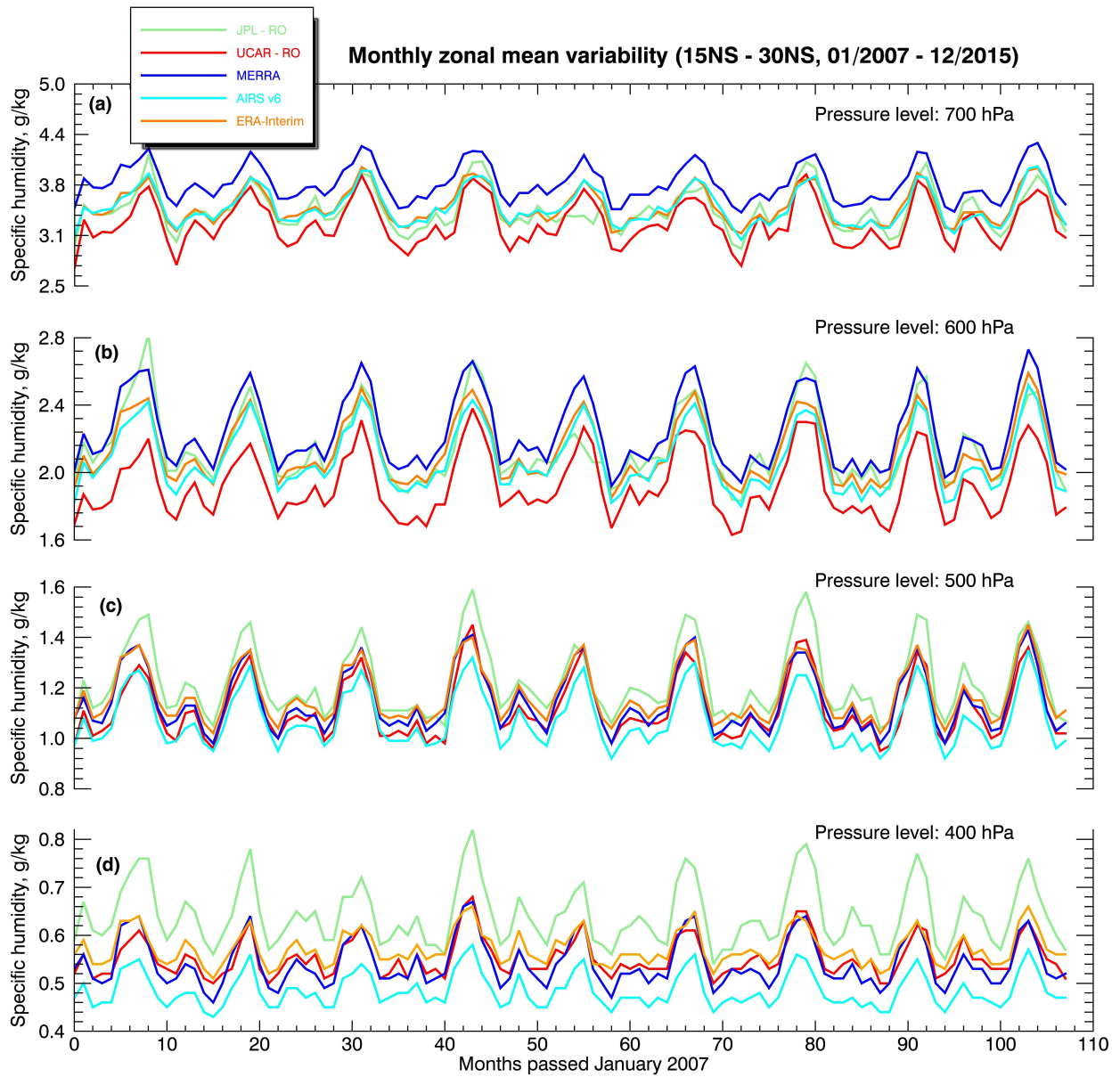
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21 **Table S1.** This is the same as Table 1, but for the $\pm 15\text{-}30^\circ$ climate zone.
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PART I: 9-year long mean of specific humidity climatology with 2-sigma uncertainty, g kg⁻¹					
Data Records	JPL	UCAR	ERA-Interim	MERRA	AIRS
400 hPa	0.64 ± 0.12	0.55 ± 0.08	0.57 ± 0.06	0.54 ± 0.10	0.49 ± 0.08
500 hPa	1.22 ± 0.28	1.12 ± 0.24	1.17 ± 0.22	1.15 ± 0.24	1.07 ± 0.22
600 hPa	2.17 ± 0.44	1.93 ± 0.38	2.13 ± 0.38	2.24 ± 0.42	2.09 ± 0.38
700 hPa	3.44 ± 0.50	3.28 ± 0.54	3.48 ± 0.44	3.77 ± 0.44	3.48 ± 0.44
PART II: 9-year long mean of deviations from JPL, g kg⁻¹					
400 hPa	n/a	- 0.09	- 0.07	- 0.10	- 0.16
500 hPa	n/a	- 0.11	- 0.05	- 0.07	- 0.15
600 hPa	n/a	- 0.23	- 0.02	- 0.09	- 0.07
700 hPa	n/a	- 0.16	+ 0.04	+ 0.33	+ 0.04
PART III: Linear regression of specific humidity anomalies with 2-sigma uncertainty, g kg⁻¹ month⁻¹					
400 hPa	$(-0.7 \pm 1.8) \times 10^{-4}$	$(1.1 \pm 1.2) \times 10^{-4}$	$(0.3 \pm 1.0) \times 10^{-4}$	$(-0.3 \pm 1.0) \times 10^{-4}$	$(-0.3 \pm 1.0) \times 10^{-4}$
500 hPa	$(-0.5 \pm 3.6) \times 10^{-4}$	$(1.6 \pm 2.8) \times 10^{-4}$	$(-0.1 \pm 2.2) \times 10^{-4}$	$(-1.3 \pm 2.2) \times 10^{-4}$	$(-1.9 \pm 2.0) \times 10^{-4}$
600 hPa	$(-6.9 \pm 6.6) \times 10^{-4}$	$(1.8 \pm 4.8) \times 10^{-4}$	$(-1.9 \pm 3.4) \times 10^{-4}$	$(-5.0 \pm 3.8) \times 10^{-4}$	$(-5.2 \pm 3.2) \times 10^{-4}$
700 hPa	$(-3.9 \pm 8.6) \times 10^{-4}$	$(-0.4 \pm 7.2) \times 10^{-4}$	$(-3.8 \pm 4.8) \times 10^{-4}$	$(-7.5 \pm 4.6) \times 10^{-4}$	$(-6.2 \pm 4.4) \times 10^{-4}$

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36 **Figure S1.** This is the same as figure 1, but for the 15NS–30NS latitudinal belt.

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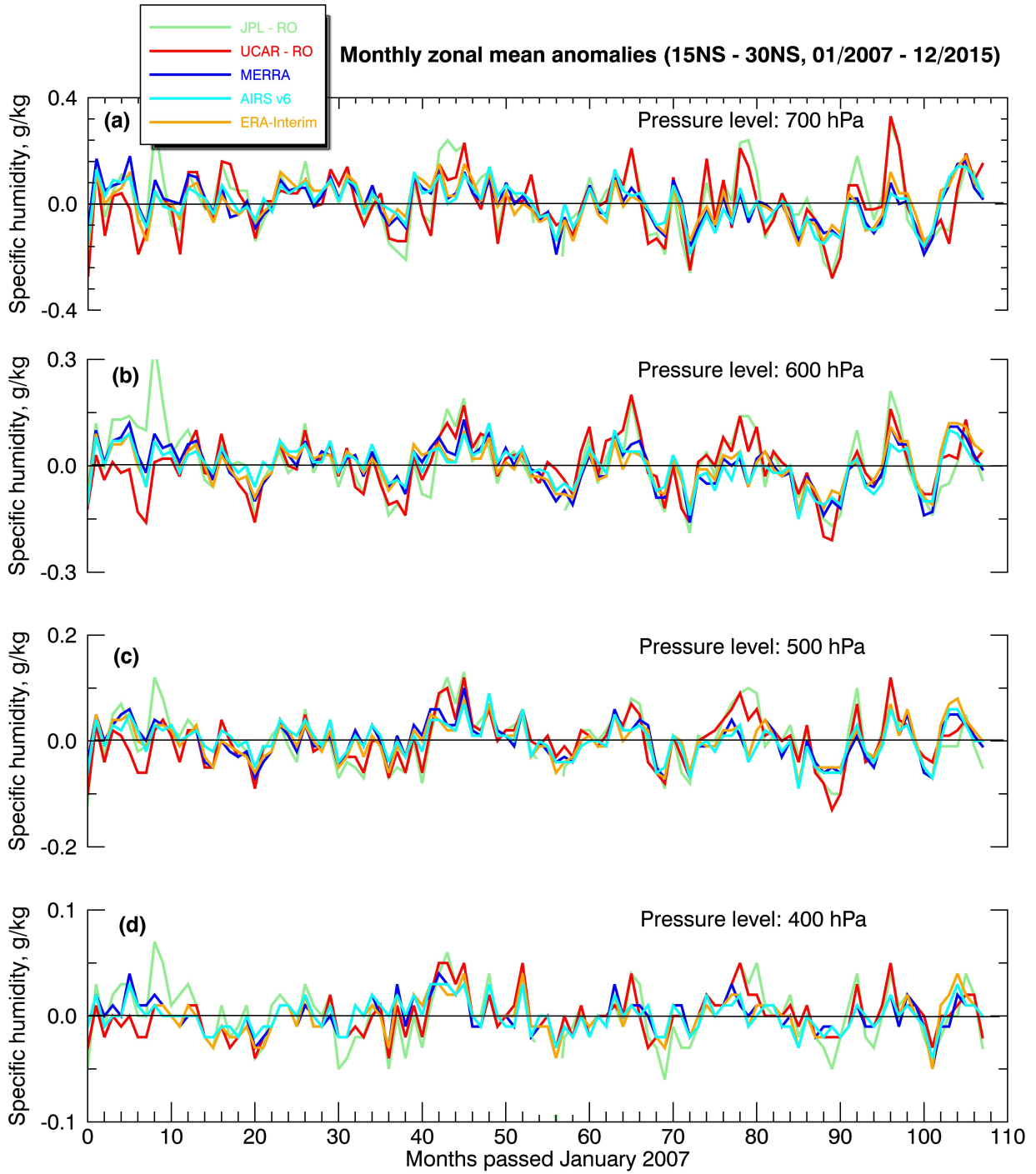
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44 **Figure S2.** This is the same as figure 2, but for the 15NS–30NS latitudinal belt.

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48 **Table S2.** This is the same as Table 1, but for the subtropics $\pm 30\text{-}40^\circ$ region.

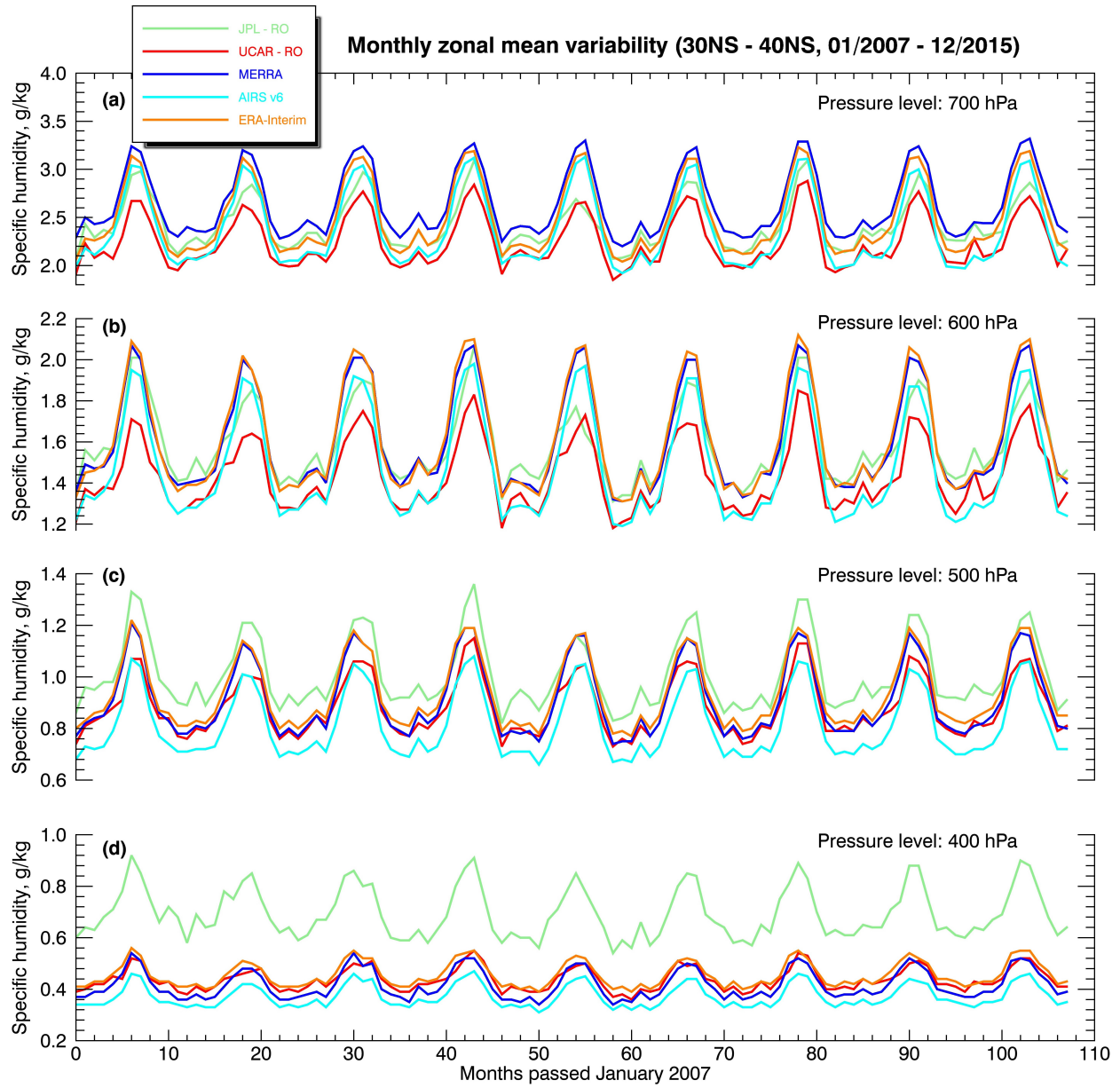
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PART I: 9-Year long mean of specific humidity climatology with 2-sigma uncertainty, g kg⁻¹					
Data Records	JPL	UCAR	ERA-Interim	MERRA	AIRS
400 hPa	0.64 ± 0.12	0.44 ± 0.08	0.46 ± 0.10	0.42 ± 0.12	0.37 ± 0.08
500 hPa	1.01 ± 0.26	0.88 ± 0.22	0.94 ± 0.28	0.92 ± 0.18	0.82 ± 0.26
600 hPa	1.59 ± 0.36	1.44 ± 0.34	1.62 ± 0.52	1.61 ± 0.48	1.48 ± 0.50
700 hPa	2.44 ± 0.52	2.25 ± 0.52	2.50 ± 0.64	2.64 ± 0.68	2.38 ± 0.76
PART II: 9-Year long mean of deviations from JPL, g kg⁻¹					
400 hPa	n/a	- 0.26	- 0.24	- 0.28	- 0.32
500 hPa	n/a	- 0.13	- 0.07	- 0.09	- 0.20
600 hPa	n/a	- 0.15	+ 0.03	+ 0.02	- 0.11
700 hPa	n/a	- 0.19	+ 0.06	+ 0.20	- 0.06
PART III: Linear regression of specific humidity anomalies with 2-sigma uncertainty, g kg⁻¹ month⁻¹					
400 hPa	$(-1.3 \pm 2.0) \times 10^{-4}$	$(1.1 \pm 1.0) \times 10^{-4}$	$(1.1 \pm 0.8) \times 10^{-4}$	$(1.0 \pm 0.8) \times 10^{-4}$	$(0.8 \pm 0.8) \times 10^{-4}$
500 hPa	$(-1.4 \pm 2.4) \times 10^{-4}$	$(1.1 \pm 2.0) \times 10^{-4}$	$(1.6 \pm 1.6) \times 10^{-4}$	$(0.3 \pm 1.6) \times 10^{-4}$	$(0.4 \pm 1.4) \times 10^{-4}$
600 hPa	$(-2.0 \pm 4.2) \times 10^{-4}$	$(2.8 \pm 3.4) \times 10^{-4}$	$(2.1 \pm 2.6) \times 10^{-4}$	$(0.4 \pm 2.8) \times 10^{-4}$	$(-3.1 \pm 2.2) \times 10^{-4}$
700 hPa	$(-0.3 \pm 5.8) \times 10^{-4}$	$(3.9 \pm 4.6) \times 10^{-4}$	$(4.0 \pm 3.6) \times 10^{-4}$	$(2.9 \pm 4.0) \times 10^{-4}$	$(-4.5 \pm 3.2) \times 10^{-4}$

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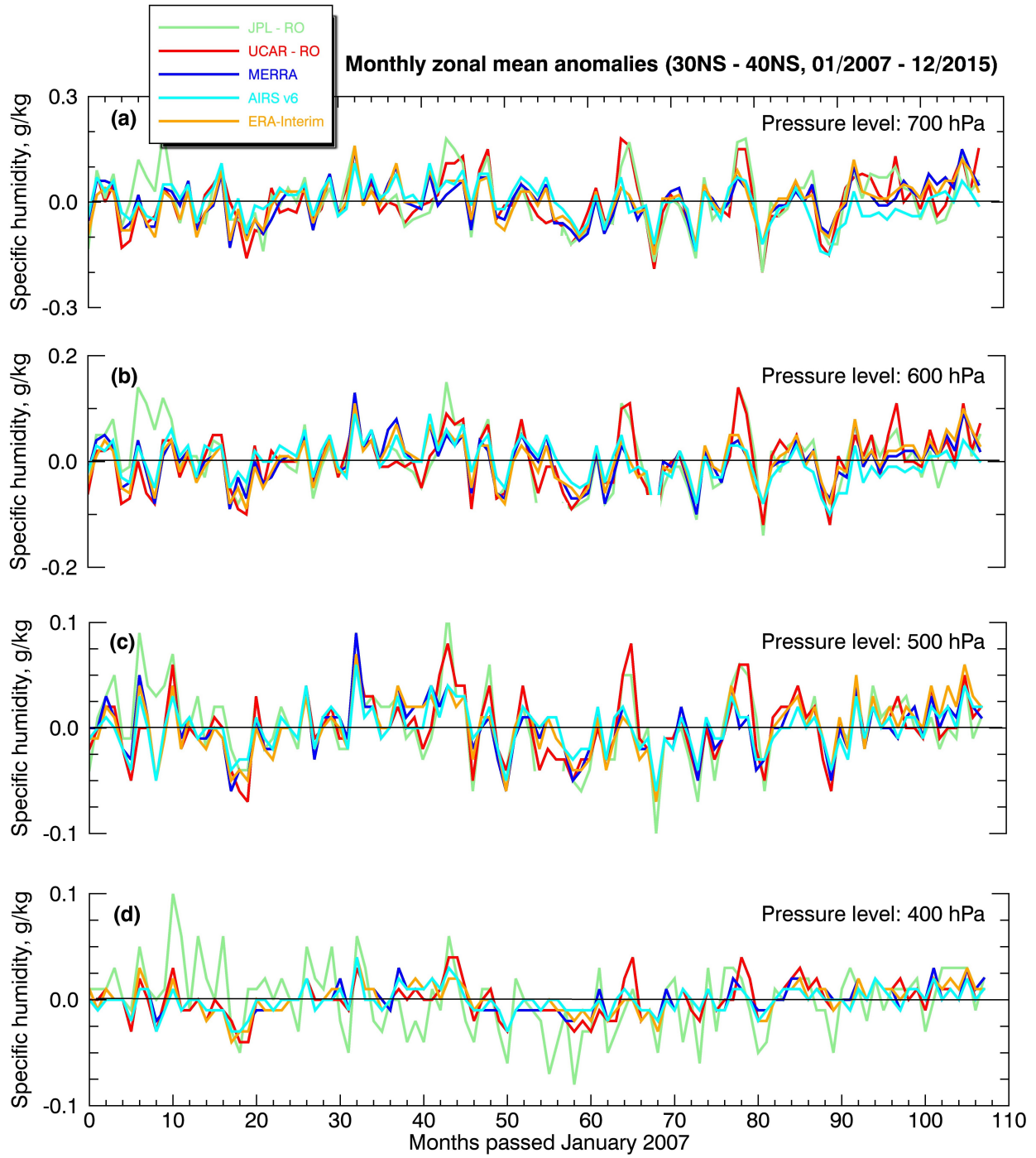
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54 **Figure S3.** This is the same as figure 1, but for the subtropics at 30NS–30NS.



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56 **Figure S4.** This is the same as figure 2, but for the subtropics $\pm 30\text{--}40\text{NS}$ region.