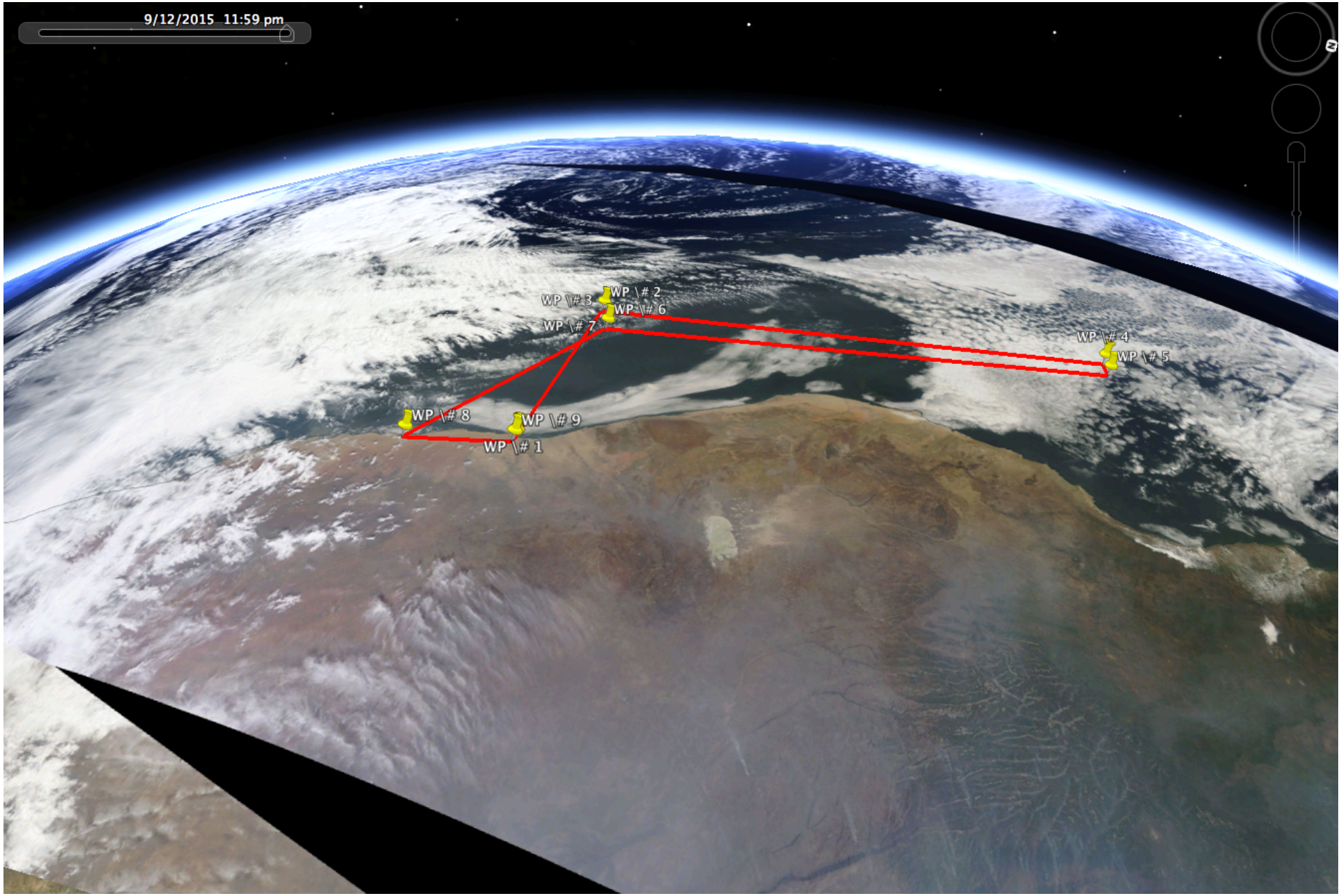
Satellite “validation”

Flight planned on 09/11 for 09/12

M. Kacenelenbogen

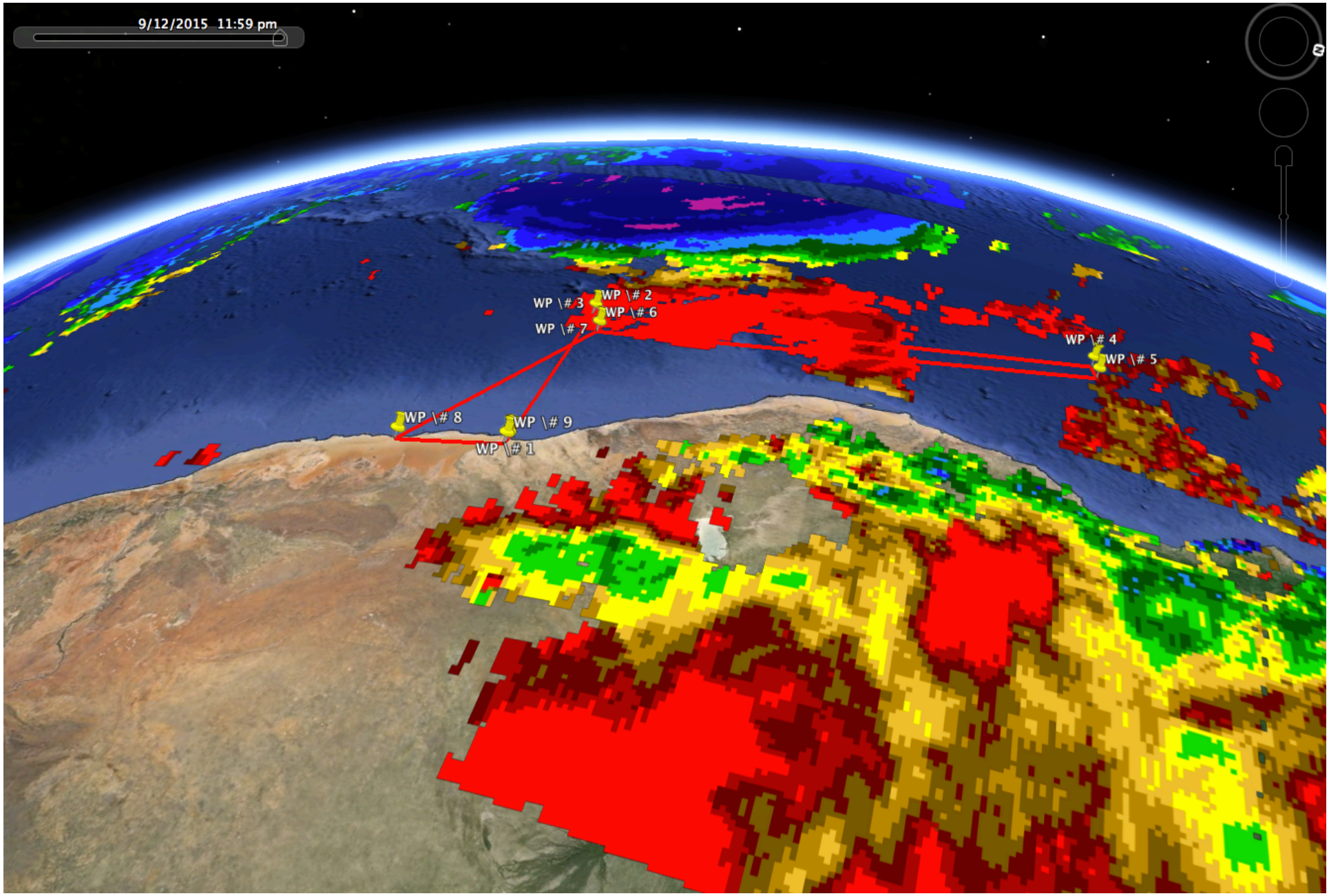
MODIS TERRA/ AQUA

MODIS RGB TERRA + P3 flight track 20150912

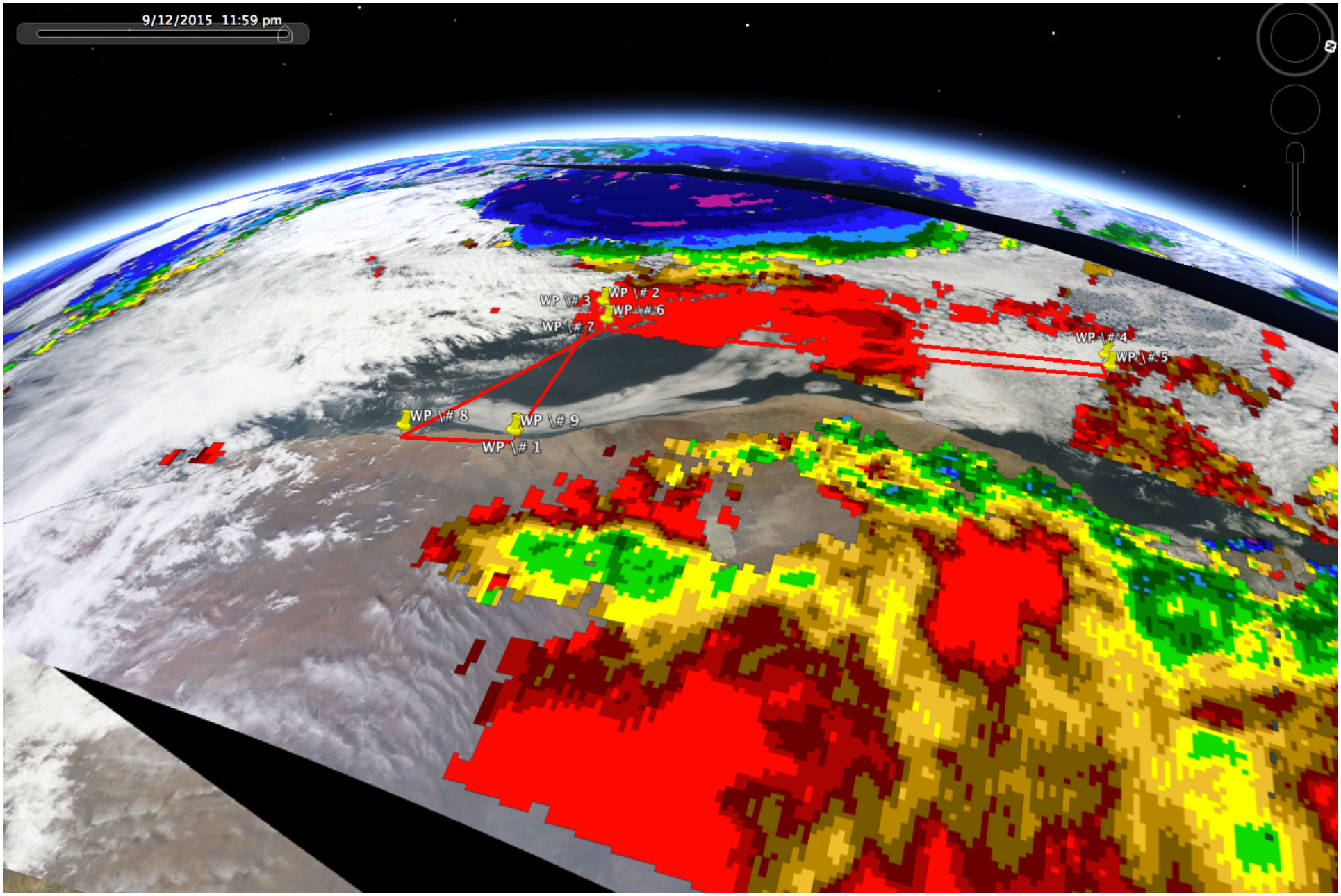


aerosol signal over land and over the ocean in the AM

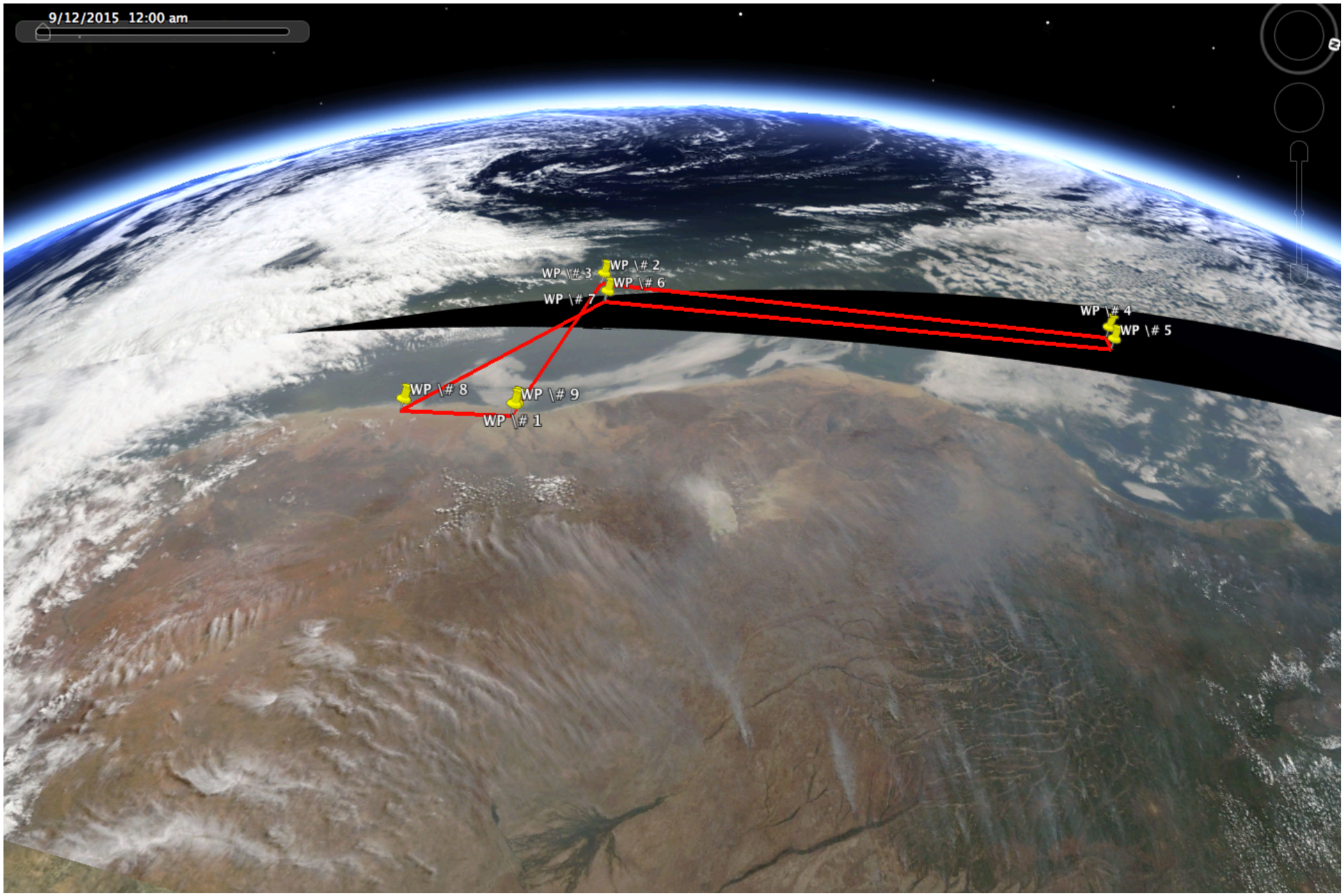
MODIS AOD TERRA + P3 flight track 20150912



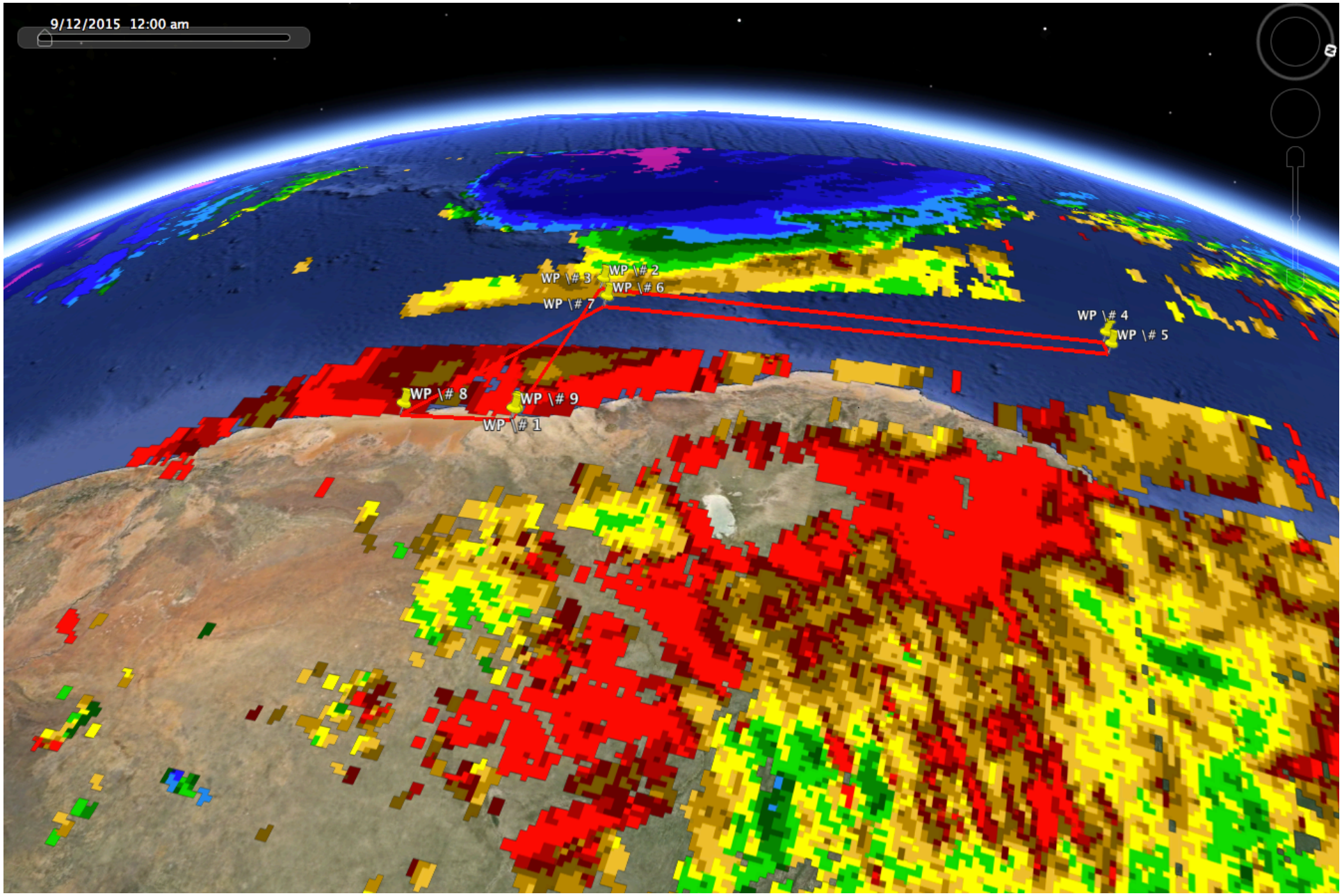
MODIS AOD TERRA + MODIS RGB TERRA + P3 flight track 20150912



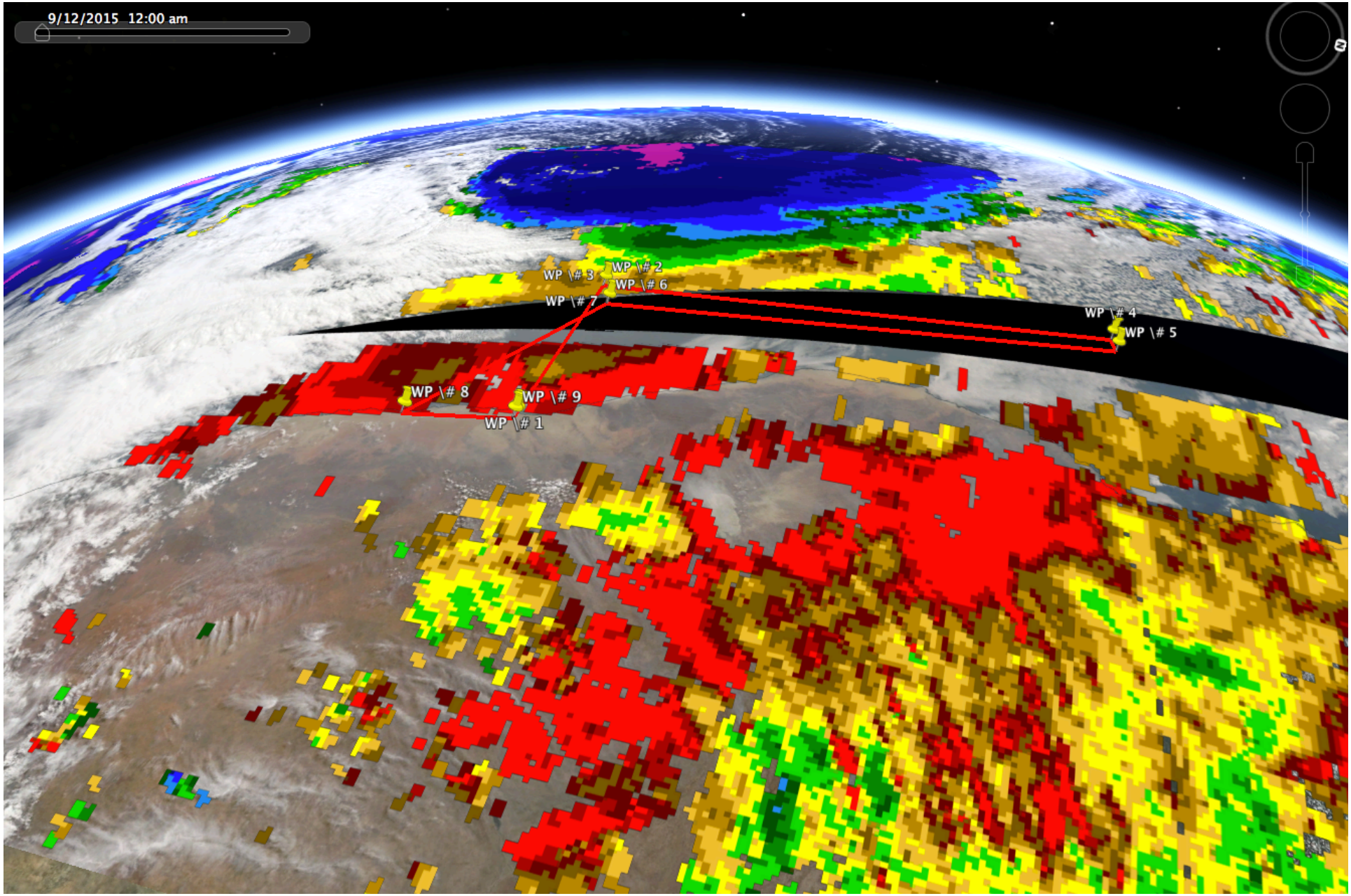
MODIS RGB AQUA + P3 flight track 20150912



MODIS AOD AQUA + P3 flight track 20150912

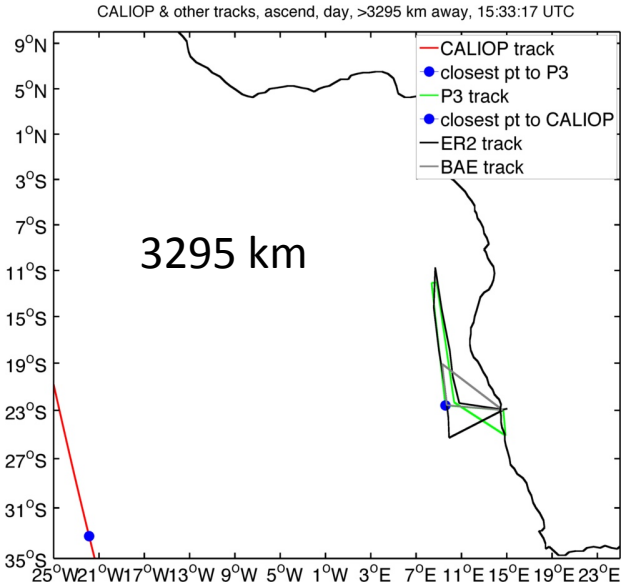


MODIS RGB AQUA + MODIS AOD AQUA + P3 flight track 20150912

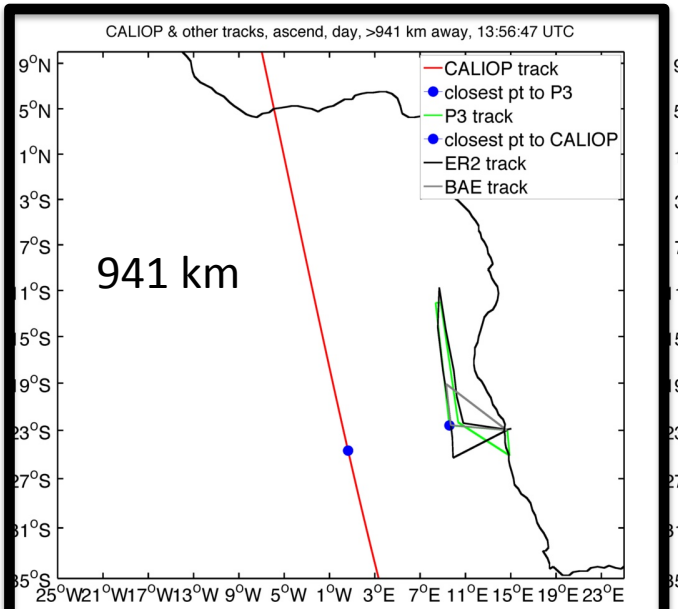


Aerosol plume traveled south from AM to PM

CALIPSO level 1



Exp-Prov-V3-30.2015-09-12T15-00-00Z.hdf



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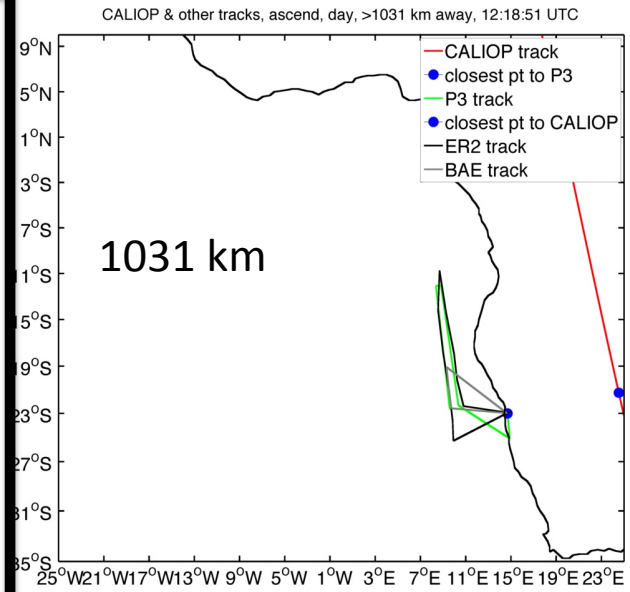

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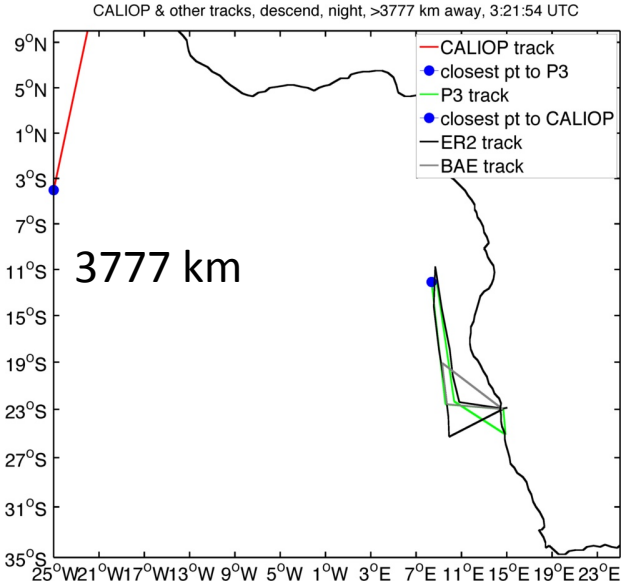

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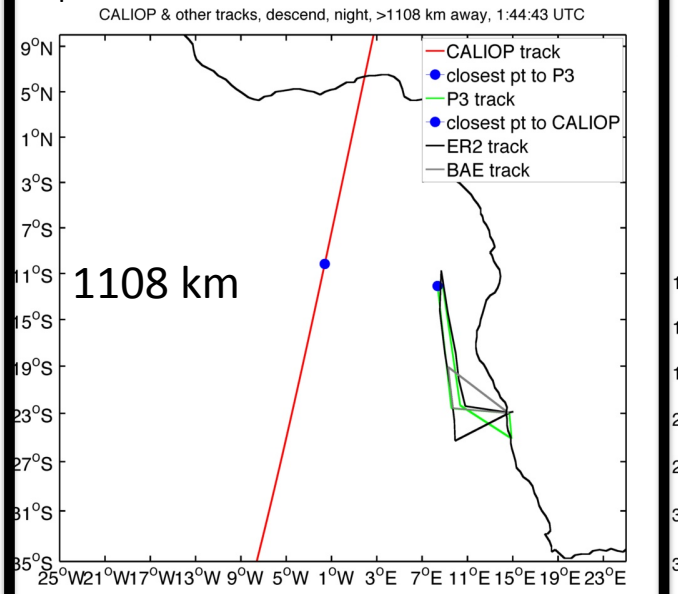

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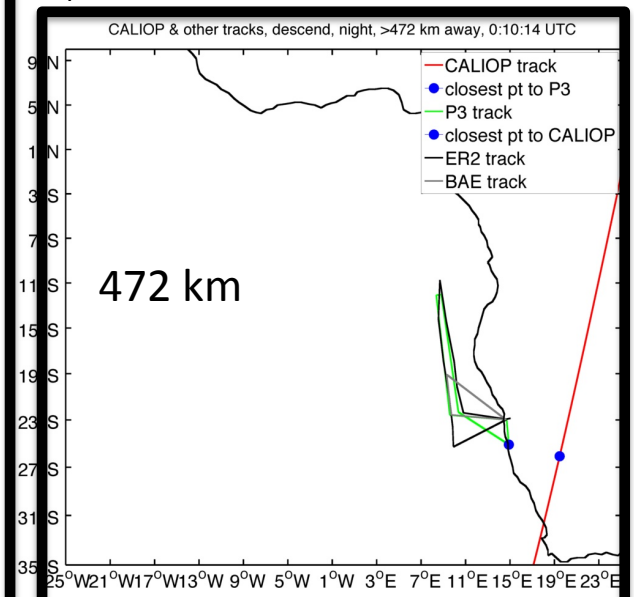
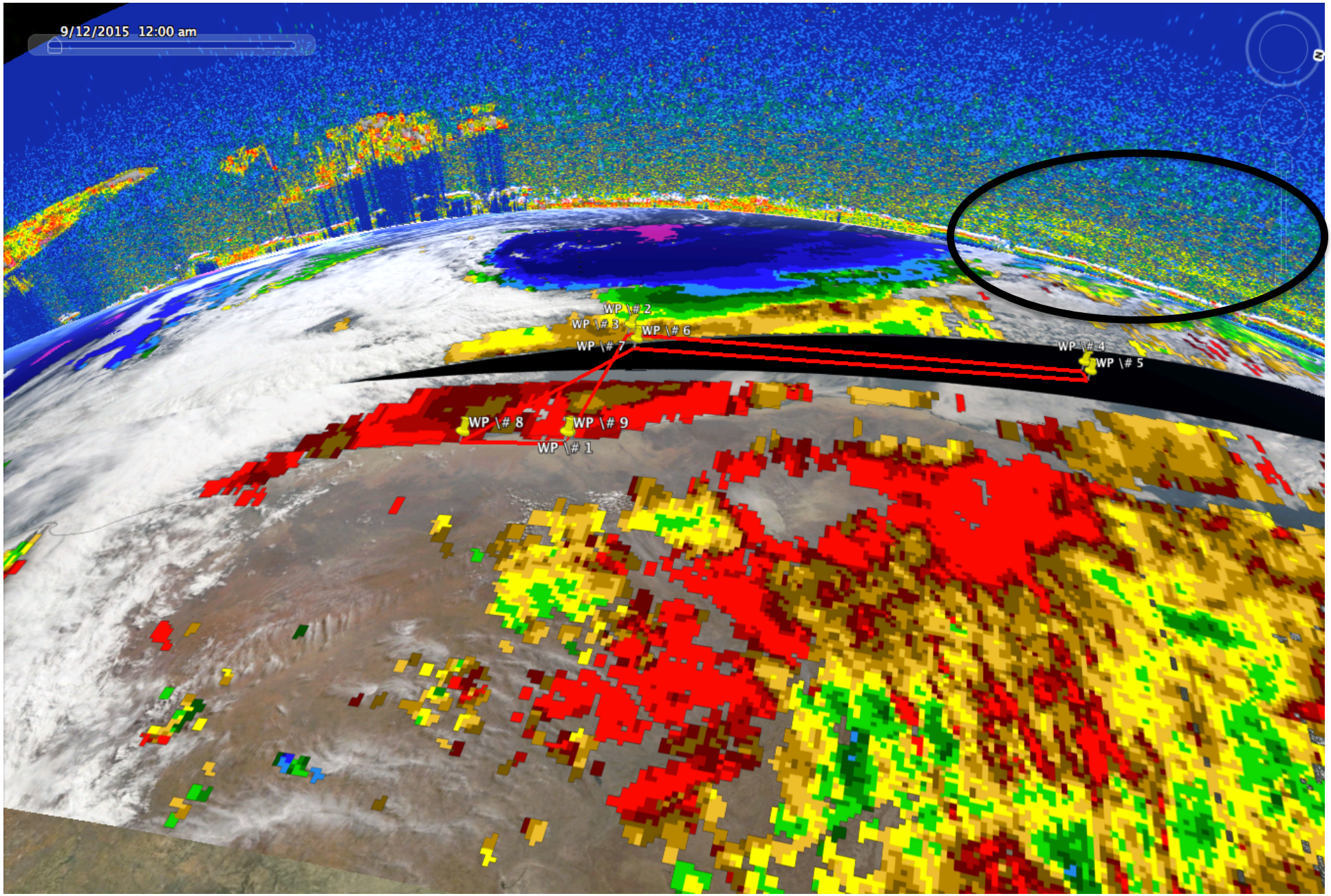
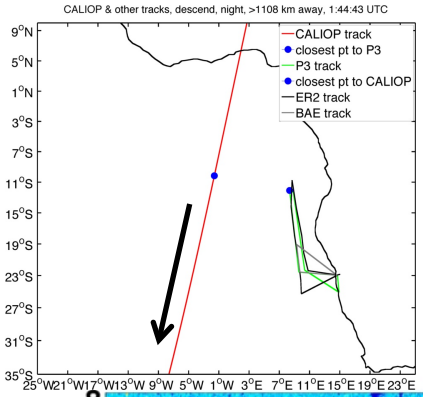


Exp-Prov-V3-30.2015-09-12T00-00-00Z.hdf

Portions of CALIOP tracks on 09/12 that fall into lat [-35, 10] and lon [-25, 25]

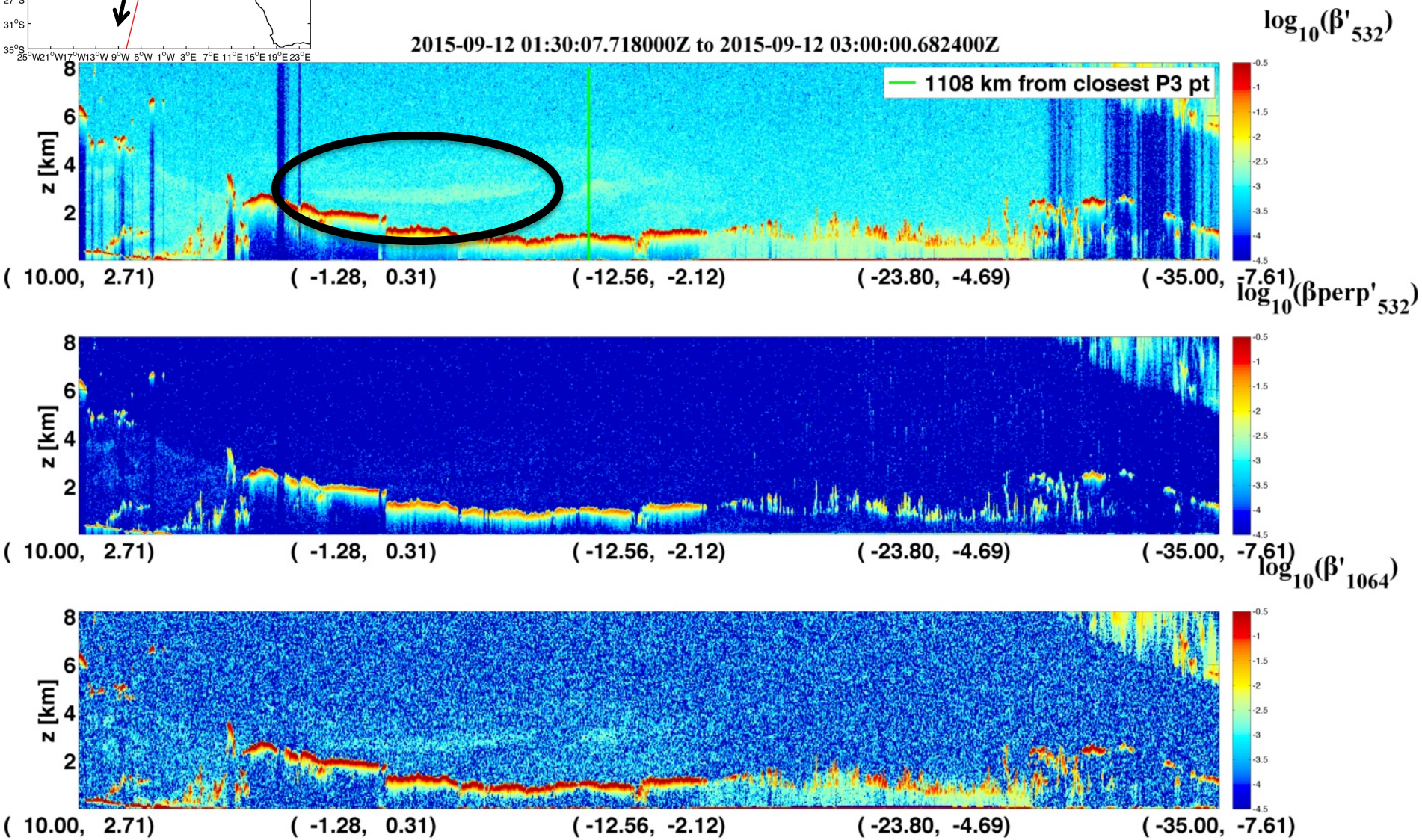
MODIS RGB AQUA + MODIS AOD AQUA + CALIOP 01:44 UTC (night) + P3 flight track



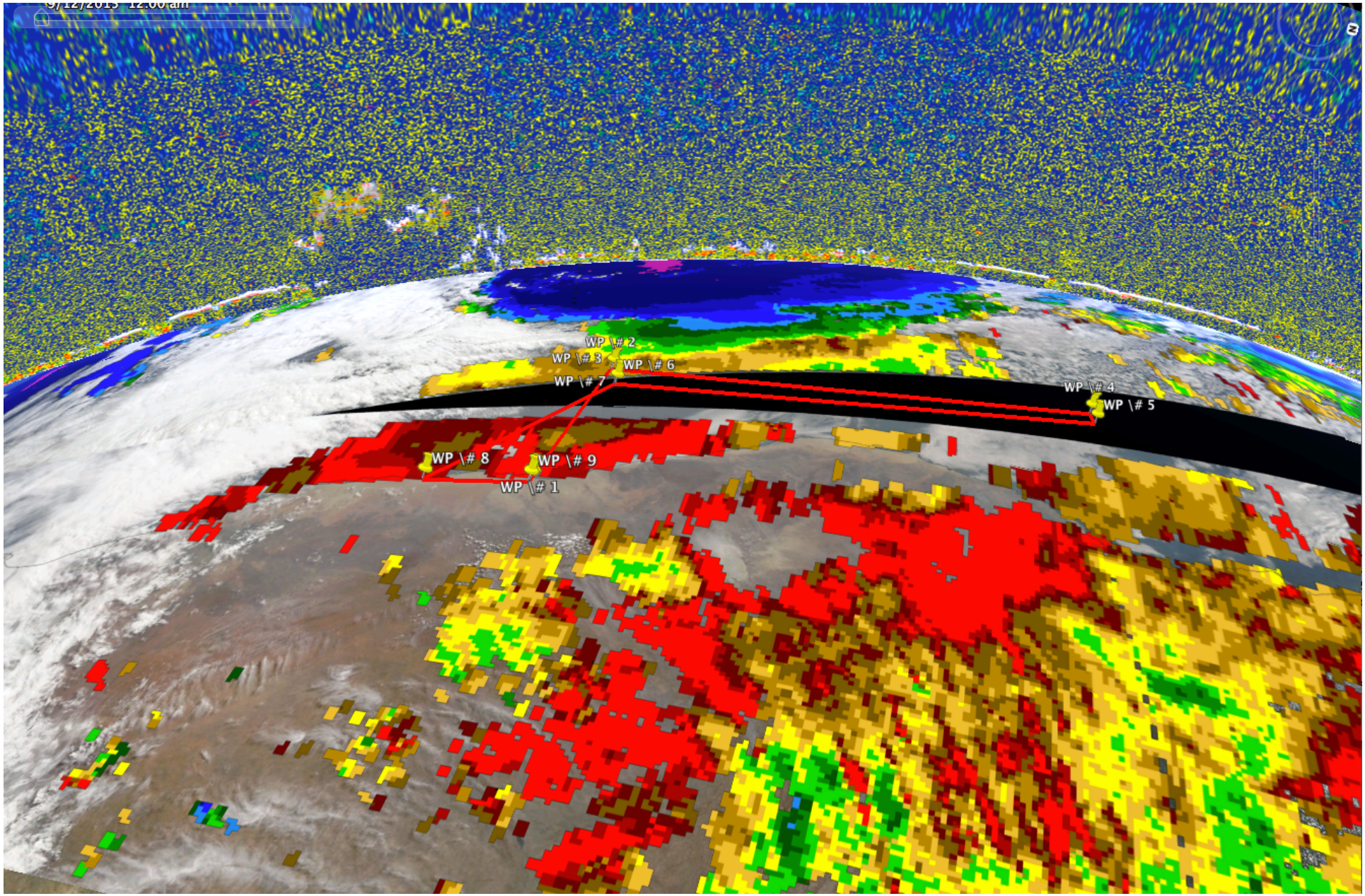


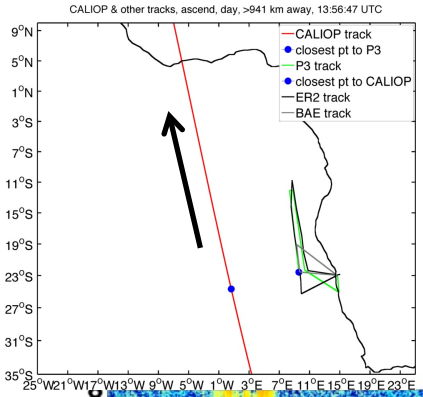
Exp-Prov-V3-30.2015-09-12T01-30-00Z.hdf
2 blue points on map are 941 km away
Sliding average of 5km (i.e. 15 consecutive profiles) is applied to all graphs below

spherical + fine => most probably smoke over clouds (resp. ~2-3km and 1-2km)



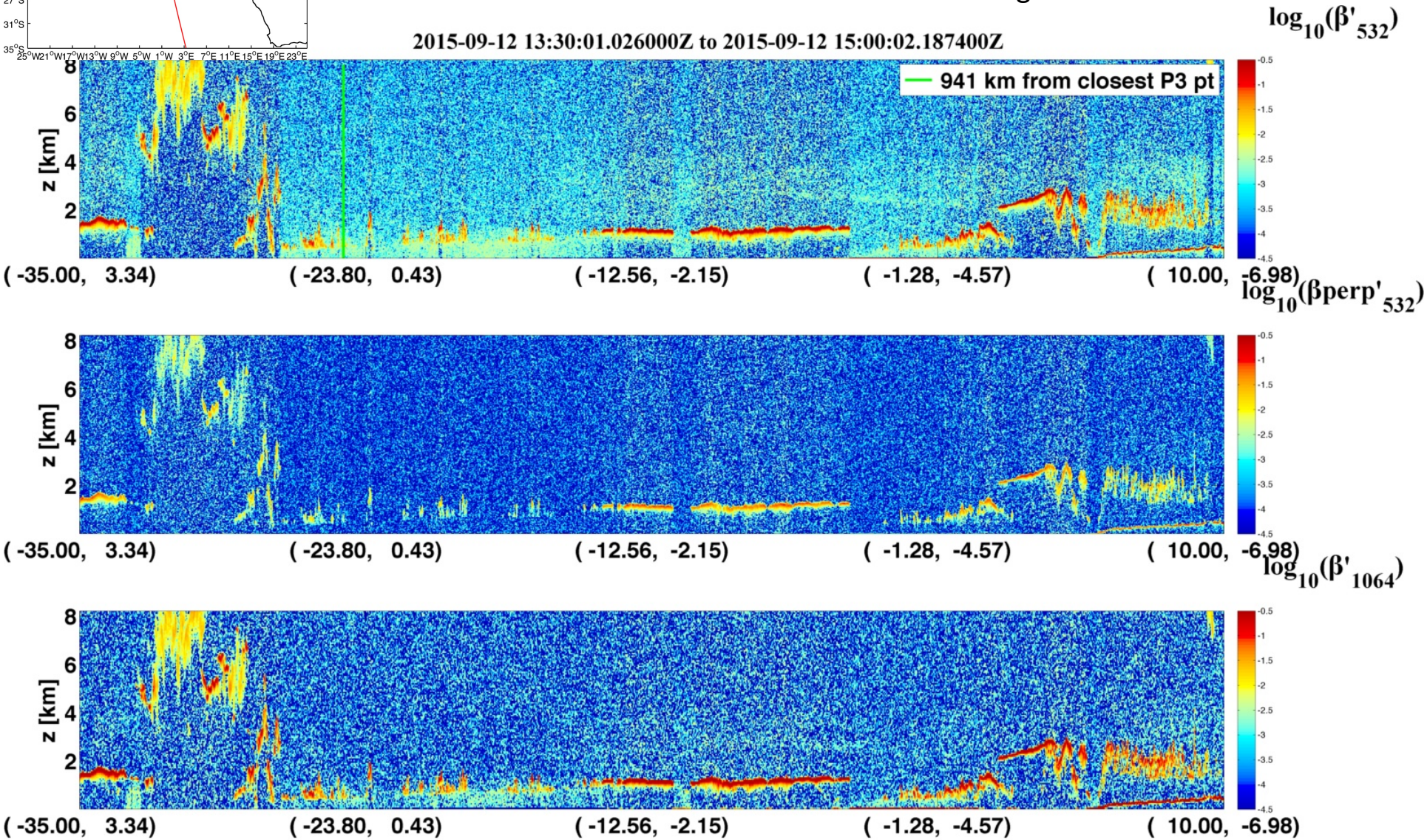
MODIS RGB AQUA + MODIS AOD AQUA + CALIOP 13:56 UTC (day) + P3 flight track

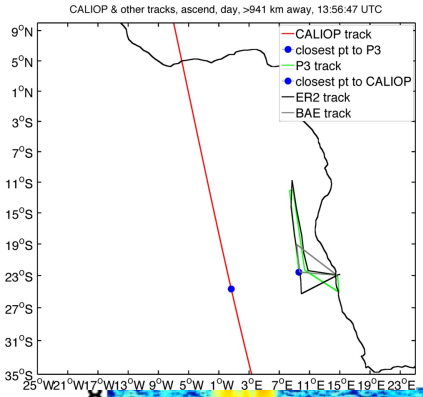




Exp-Prov-V3-30.2015-09-12T13-30-00Z.hdf
2 blue points on map are 941 km away
Sliding average of 5km (i.e. 15 consecutive profiles) is applied to all graphs below

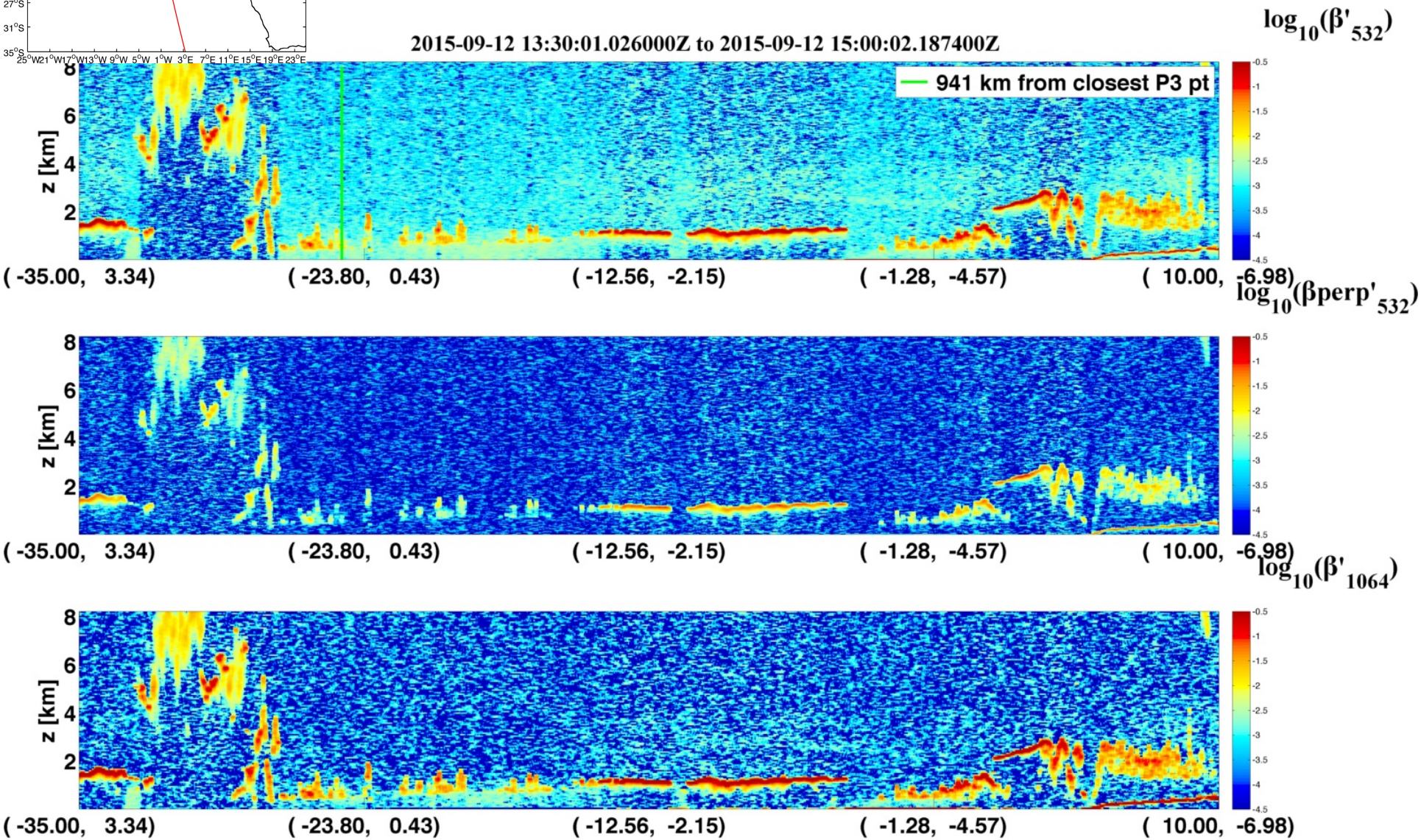
We were flying above broken clouds
Aerosol: SNR too low or aerosol too tenuous –no signal-

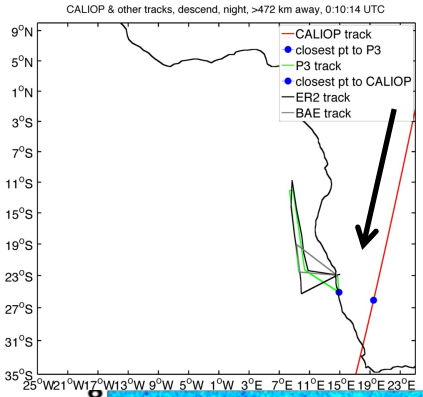




Exp-Prov-V3-30.2015-09-12T13-30-00Z.hdf
2 blue points on map are 941 km away
Sliding average of 20km (i.e. 60 consecutive profiles) is applied to all graphs below

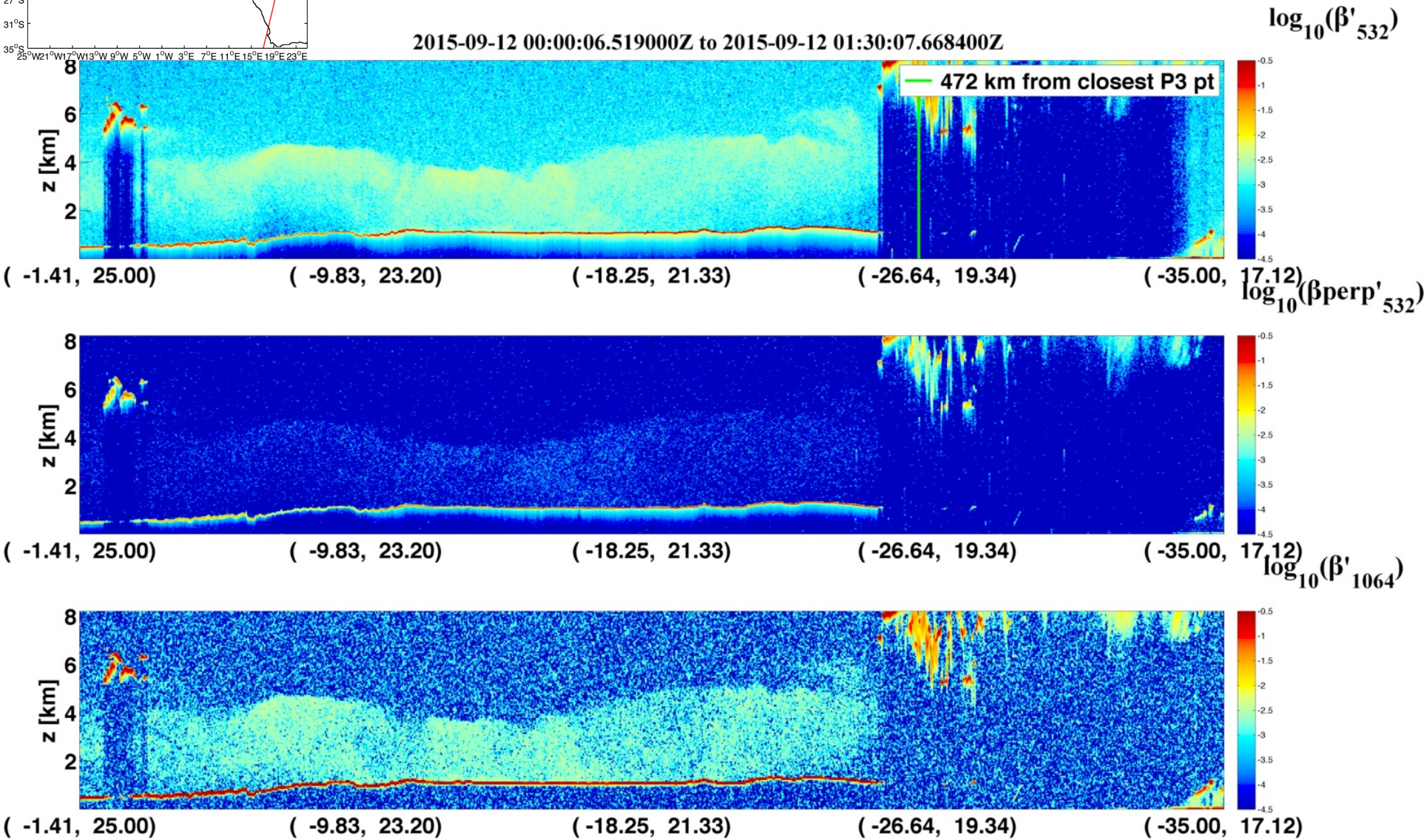
Still can not pick up aerosol above clouds with more averaging





Exp-Prov-V3-30.2015-09-12T00-00-00Z.hdf
2 blue points on map are 941 km away
Sliding average of 5km (i.e. 15 consecutive profiles) is applied to all graphs below

Non-spherical + coarse => most probably dust in clear sky



On 09/12 at time of flight (daytime)

- TERRA picks up aerosol signal over the ocean in the AM
- AQUA picks up plume further south in the PM
- CALIOP: some broken clouds above flight track in the PM, aerosol above tenuous but >941 km away…
- CALIOP the night before seems to show dust over land and smoke over ocean