Validation of the SARB Global Atmospheric Aerosol Dataset

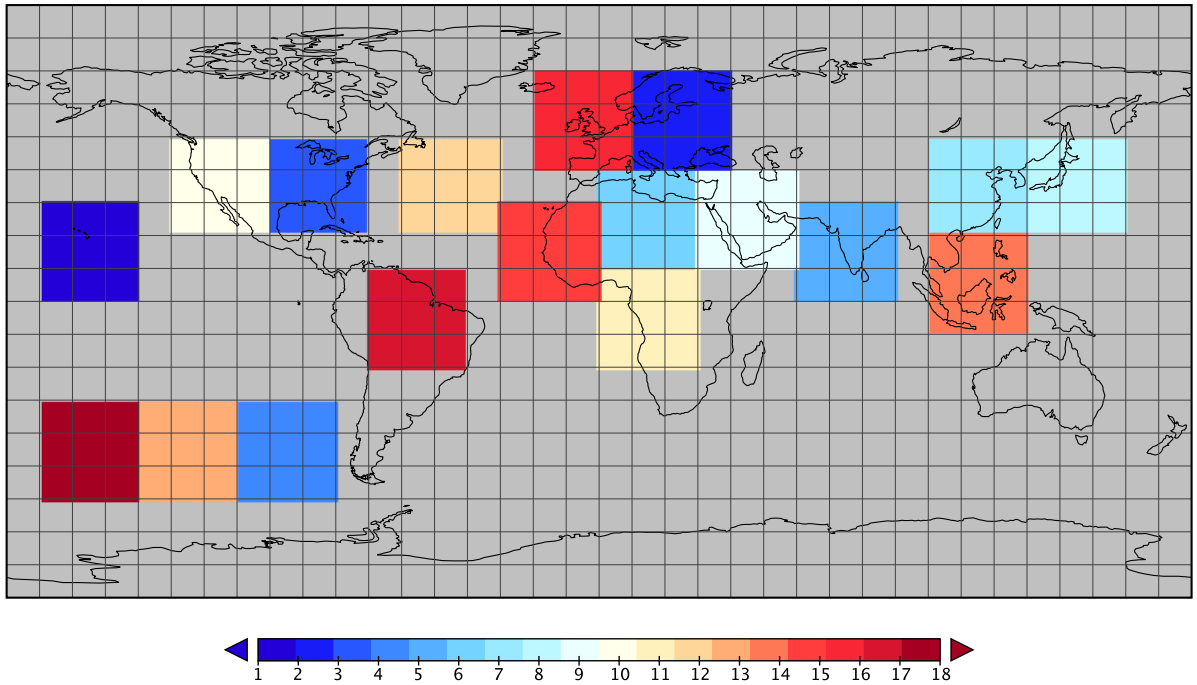
NASA CERES Science Team Meeting
NASA Langley

David Fillmore

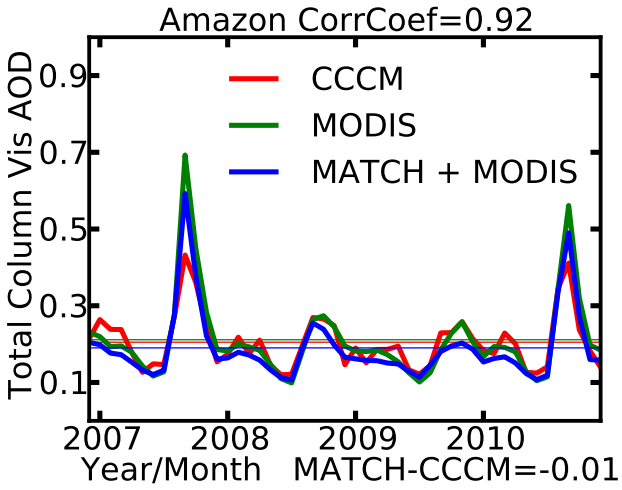
2013 May 7

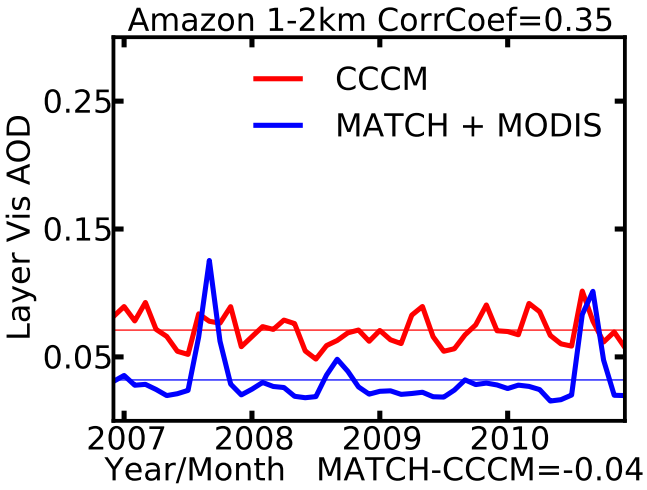
MATCH Validation

1. MATCH + MODIS assimilation versus CCCM vertical AOD, regional, monthly
2. MATCH + MODIS assimilation versus MISR spectral AOD, absorption AOD, seasonal



Amazon


Amazon CorrCoef=0.92
Total Column Vis AOD
0.9
0.7
0.5
0.3
0.1
CCCM
MODIS
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=-0.01


Amazon 1-2km CorrCoef=0.35
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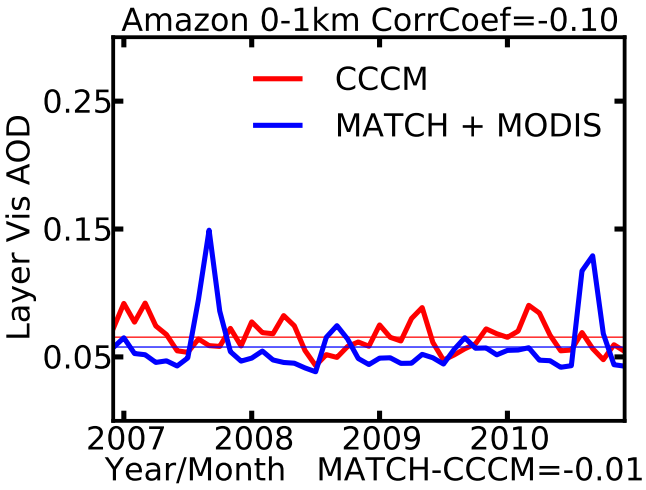
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=-0.04


Amazon 0-1km CorrCoef=-0.10
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CCCM
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2008
2009
2010
Year/Month
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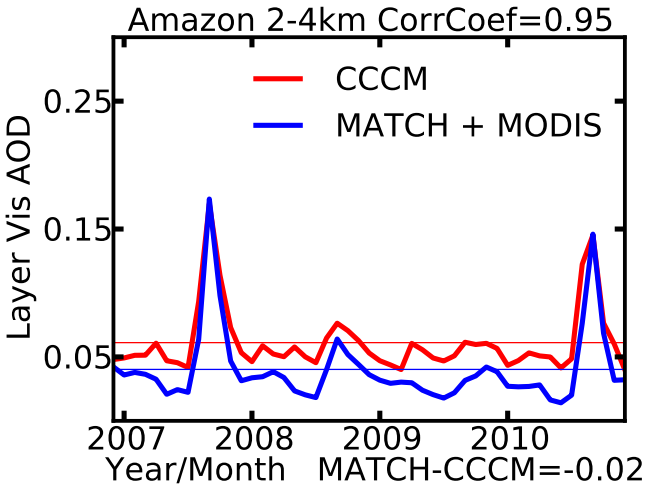
Amazon 2-4km CorrCoef=0.95
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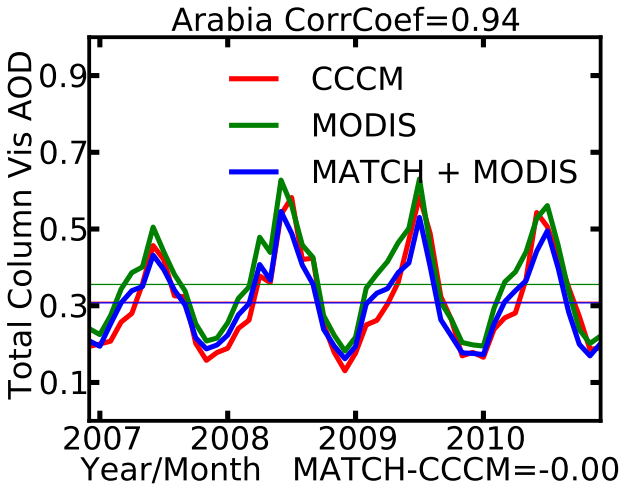
2007
2008
2009
2010
Year/Month
MATCH-CCCM=-0.02

Arabia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MODIS
MATCH + MODIS
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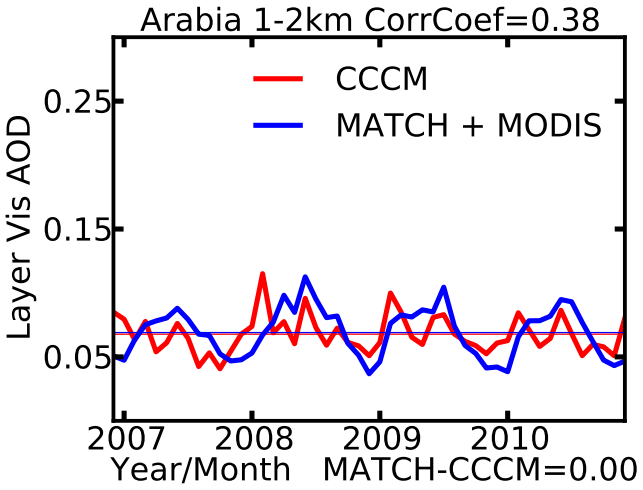
2010
Year/Month
MATCH-CCCM=-0.00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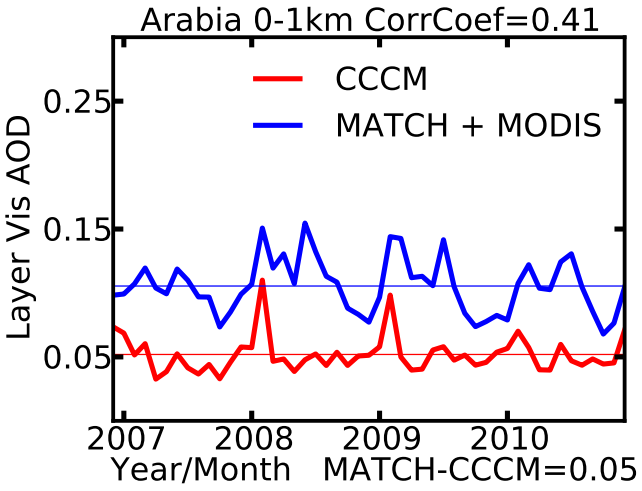
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CCCM
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2008
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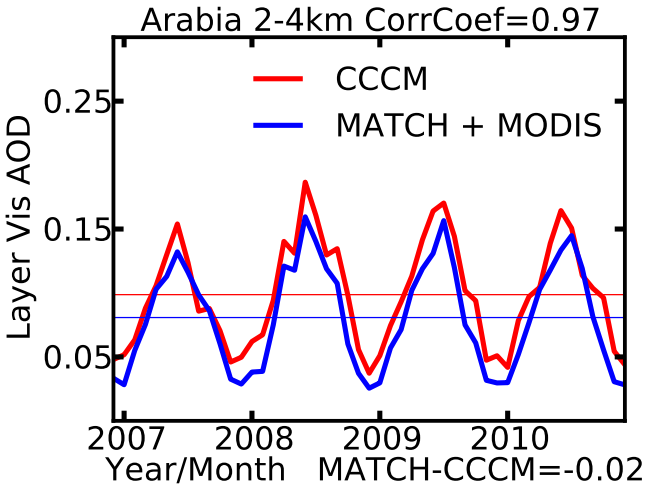
Year/Month
MATCH-CCCM=0.05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CCCM
MATCH + MODIS
2007
2008
2009
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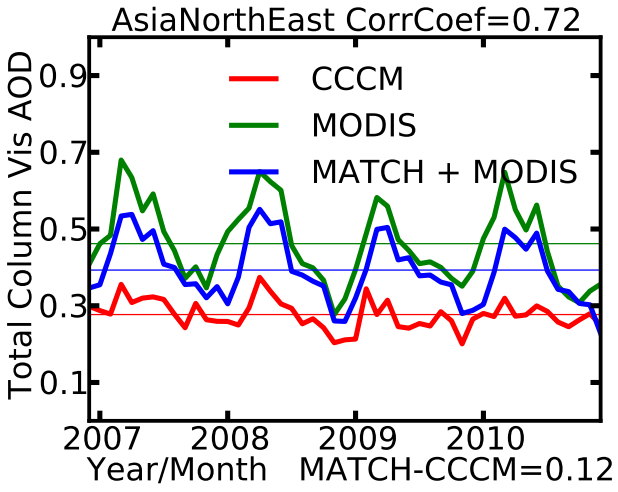
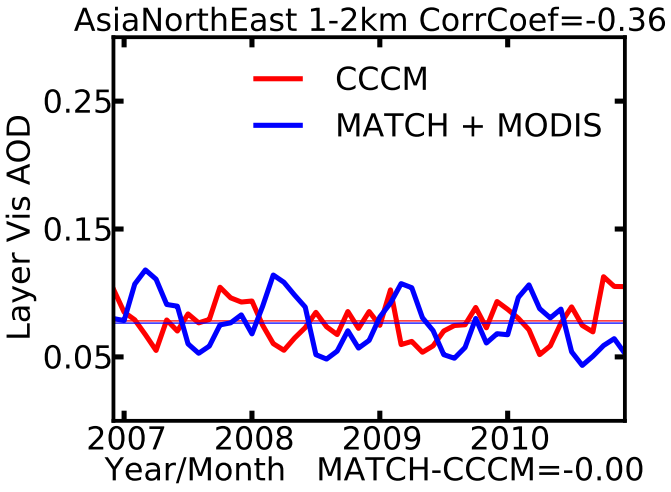
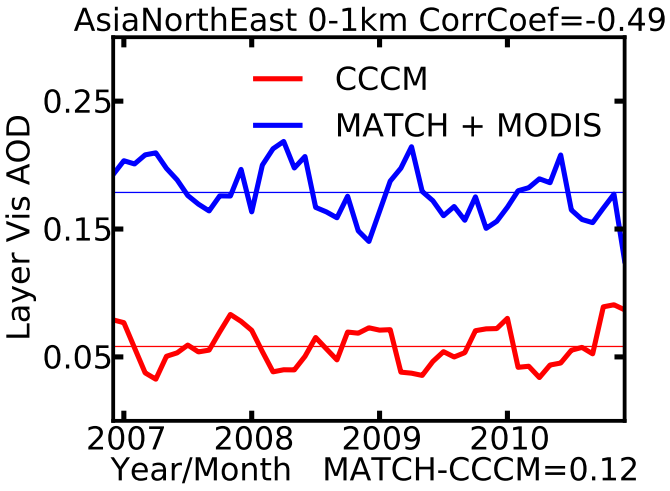
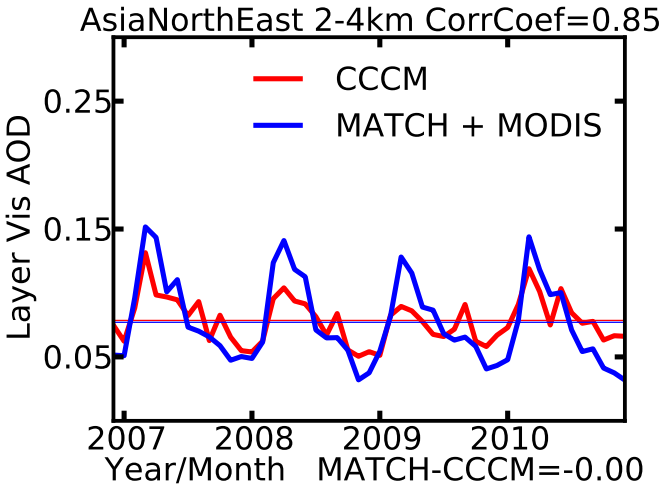
Year/Month
MATCH-CCCM=-0.02

AsiaNorthEast

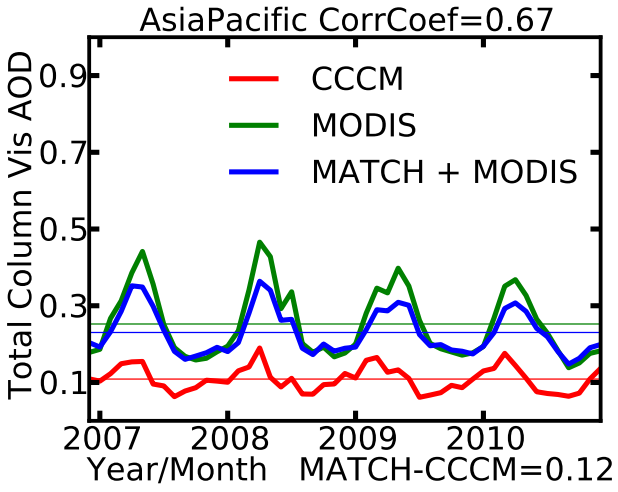


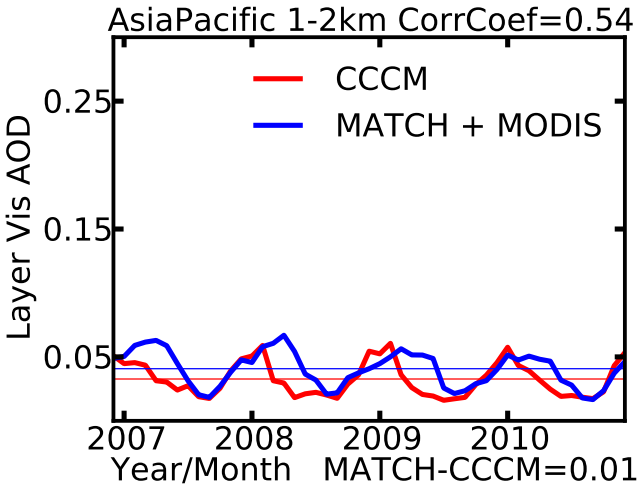


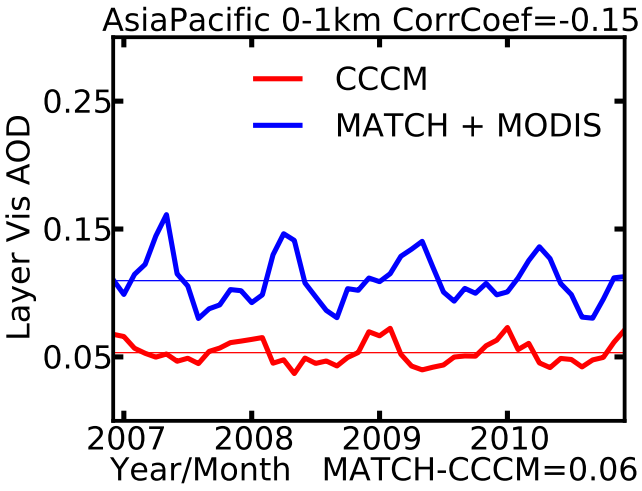


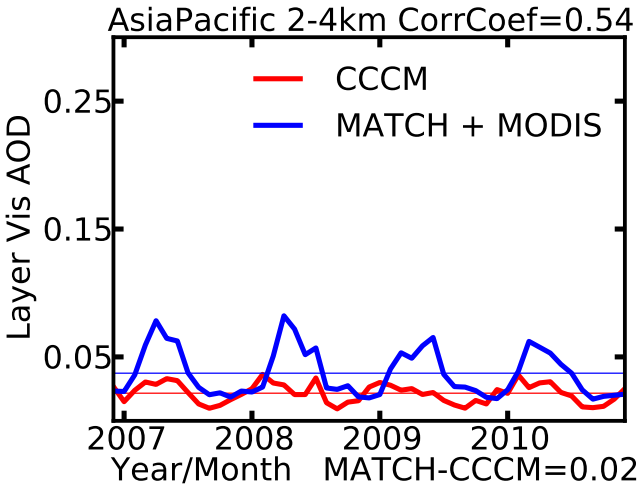


AsiaPacific

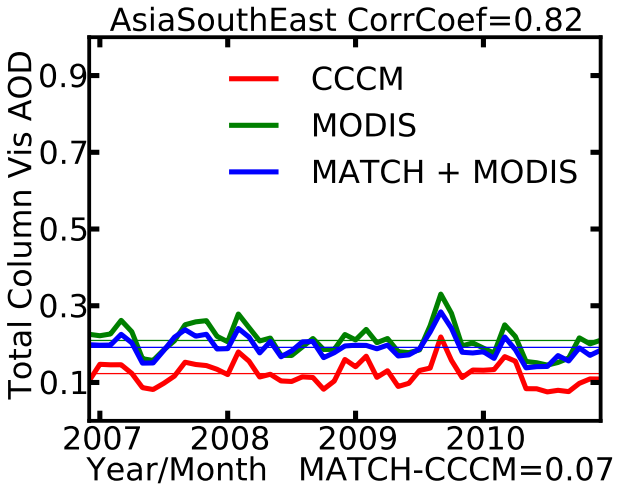


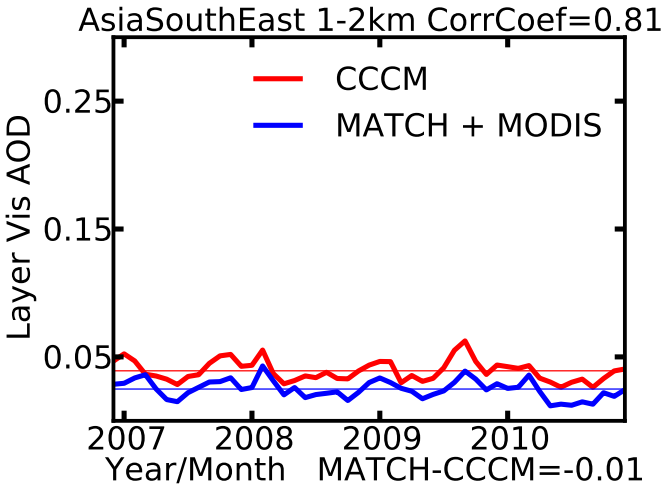


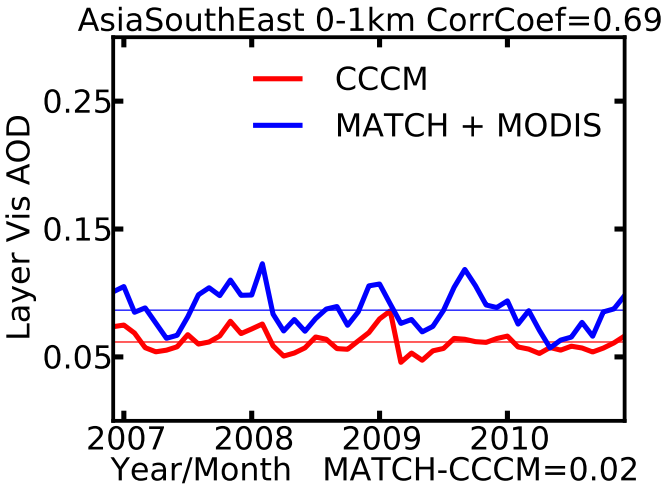


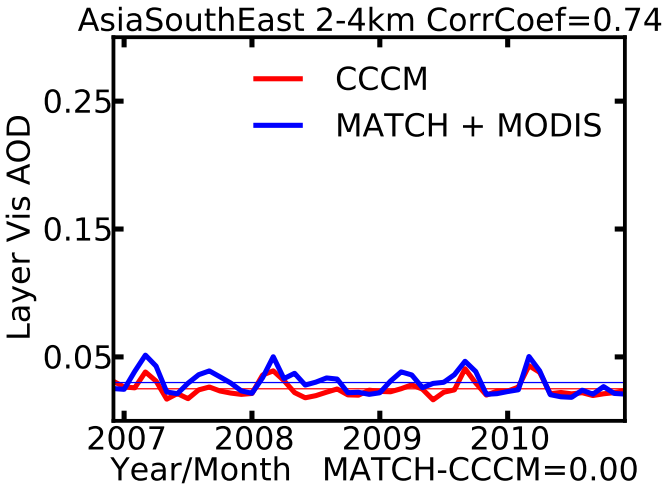


AsiaSouthEast

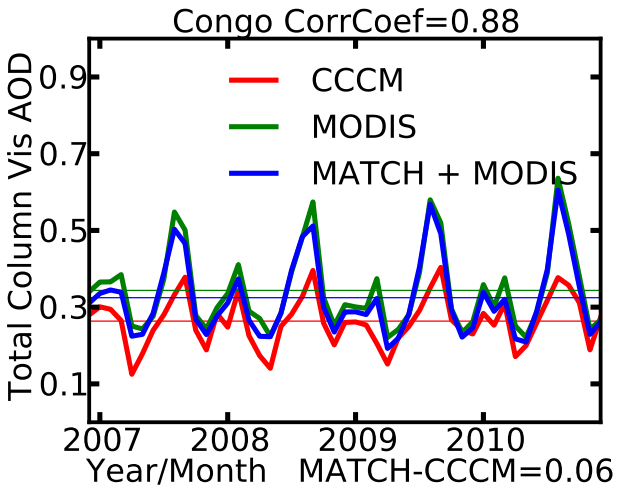








Congo


Congo CorrCoef=0.88
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CCCM
MODIS
MATCH + MODIS
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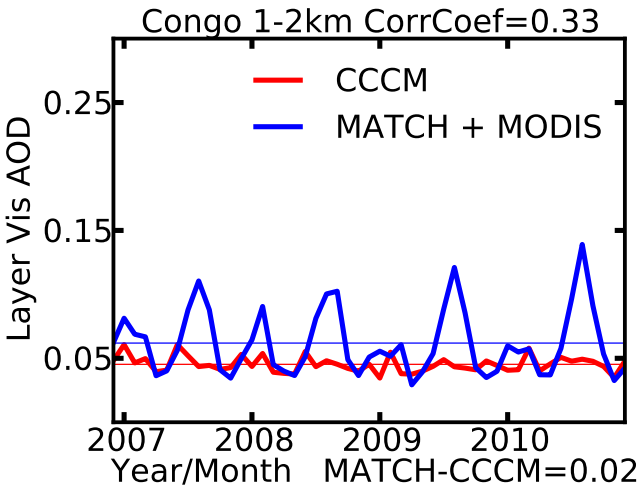
2010
Year/Month
MATCH-CCCM=0.06


Congo 1-2km CorrCoef=0.33
Layer Vis AOD
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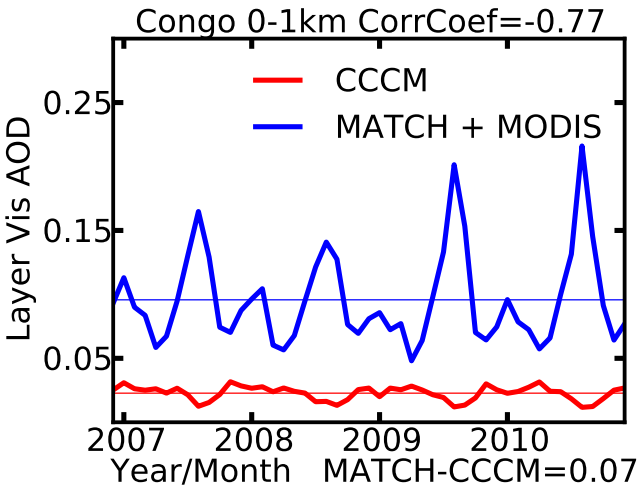
0.05
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=0.02


Congo 0-1km CorrCoef=-0.77
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CCCM
MATCH + MODIS
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2008
2009
2010
Year/Month
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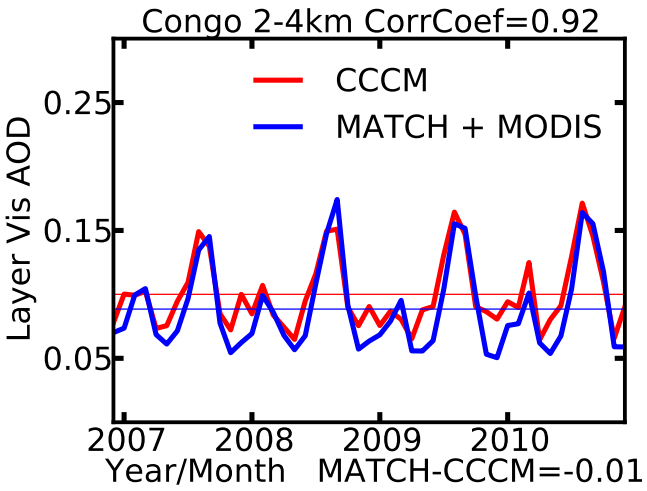
Congo 2-4km CorrCoef=0.92
Layer Vis AOD
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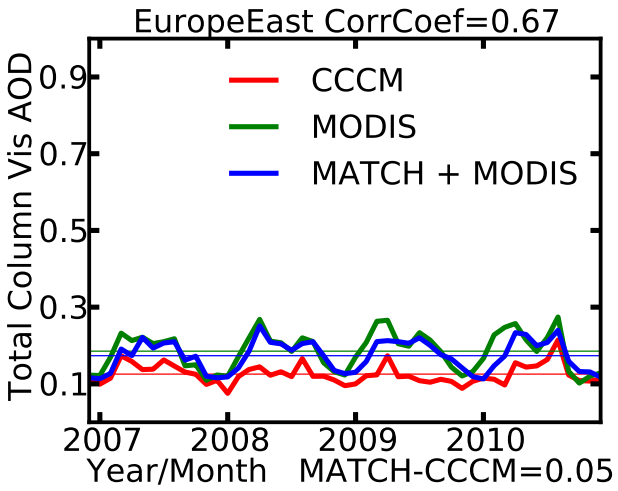
0.05
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=-0.01

EuropeEast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CCCM
MODIS
MATCH + MODIS
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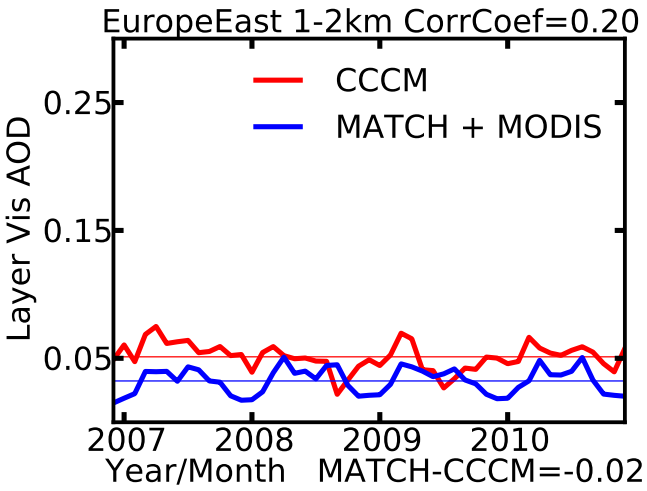
2010
Year/Month
MATCH-CCCM=0.05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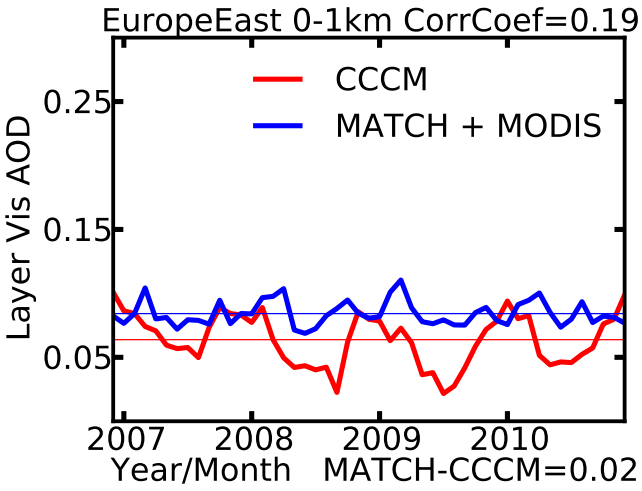
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=-0.02


EuropeEast 0-1km CorrCoef=0.19
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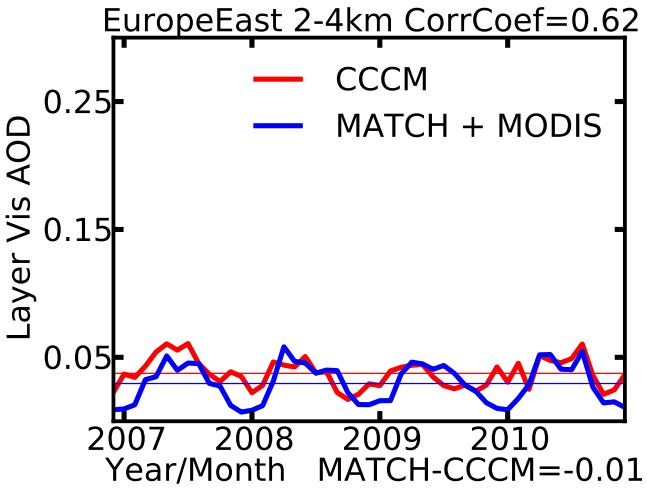
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=0.02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CCCM
MATCH + MODIS
2007
2008
2009
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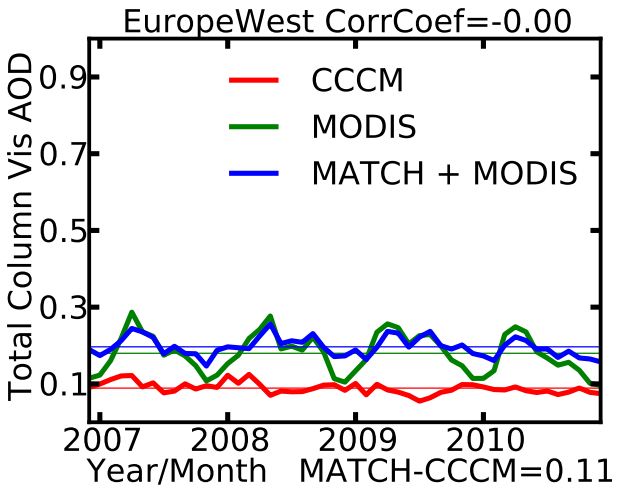
Year/Month
MATCH-CCCM=-0.01

EuropeWest


EuropeWest CorrCoef=-0.00
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CCCM
MODIS
MATCH + MODIS
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2010
Year/Month
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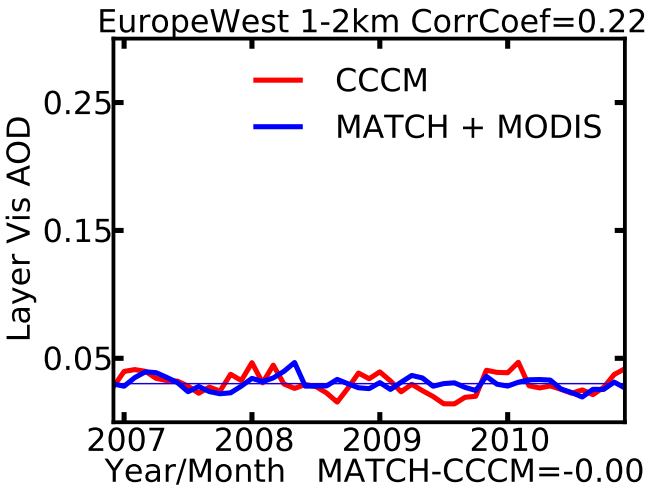
EuropeWest 1-2km CorrCoef=0.22
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2008
2009
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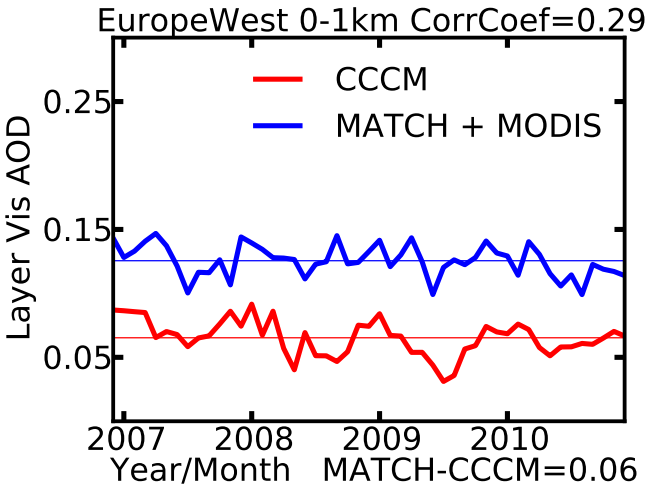
Year/Month
MATCH-CCCM=-0.00


EuropeWest 0-1km CorrCoef=0.29
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MATCH + MODIS
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Year/Month
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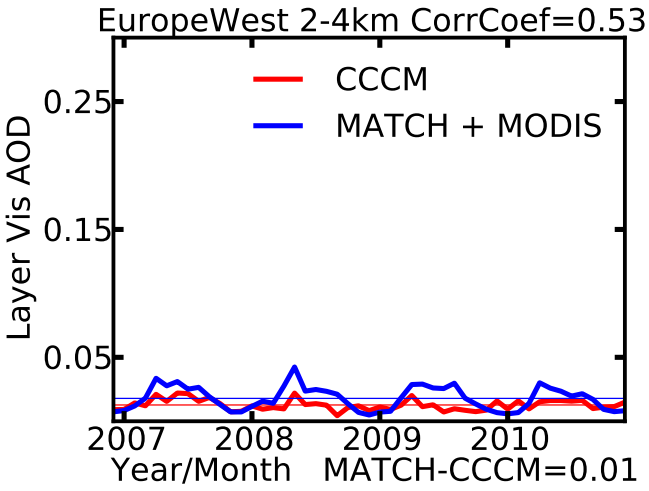
EuropeWest 2-4km CorrCoef=0.53
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CCCM
MATCH + MODIS
2007
2008
2009
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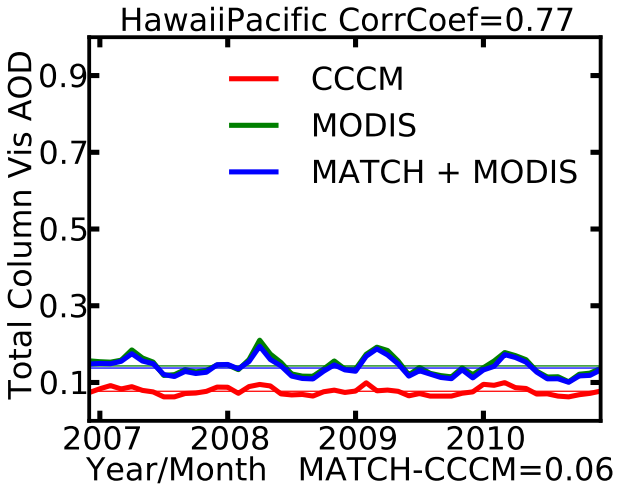
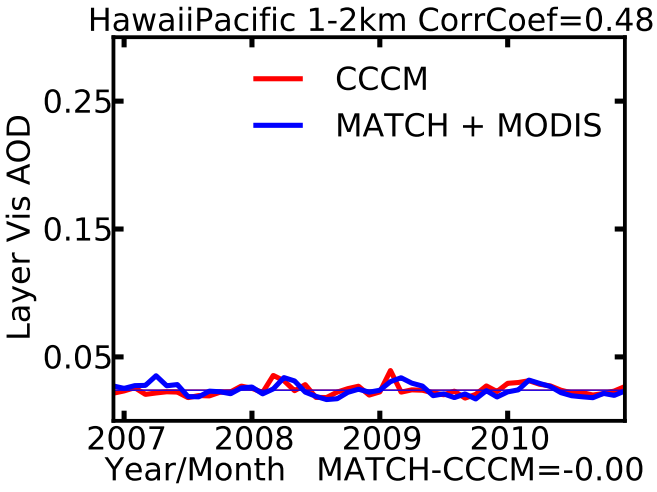
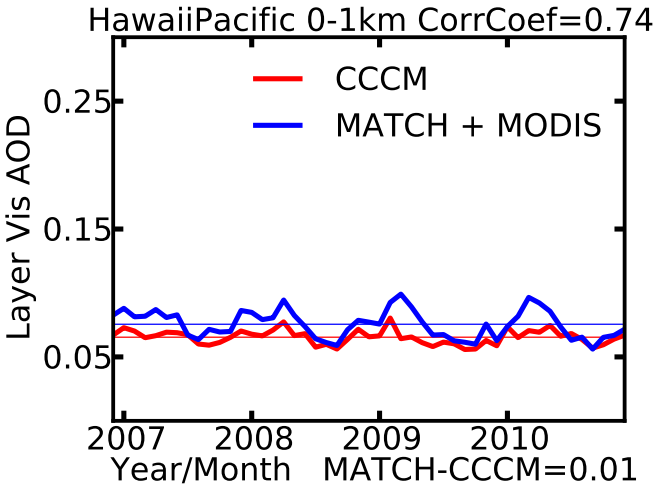
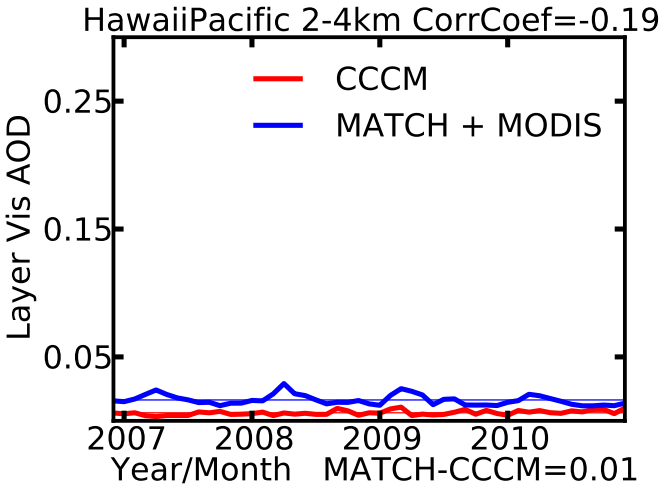
Year/Month
MATCH-CCCM=0.01

HawaiiPacific

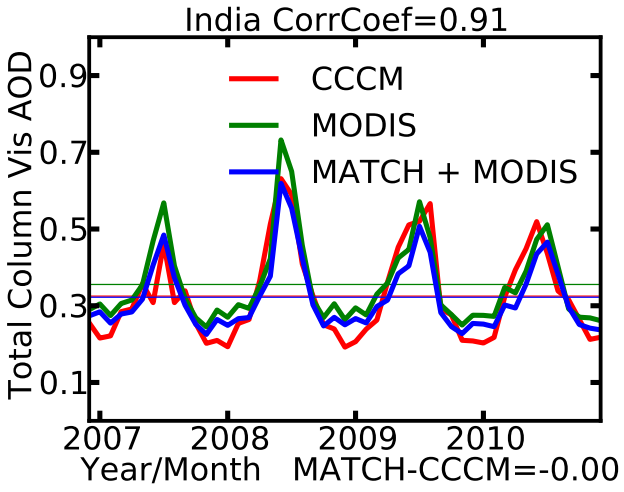








India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0.5
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0.1
CCCM
MODIS
MATCH + MODIS
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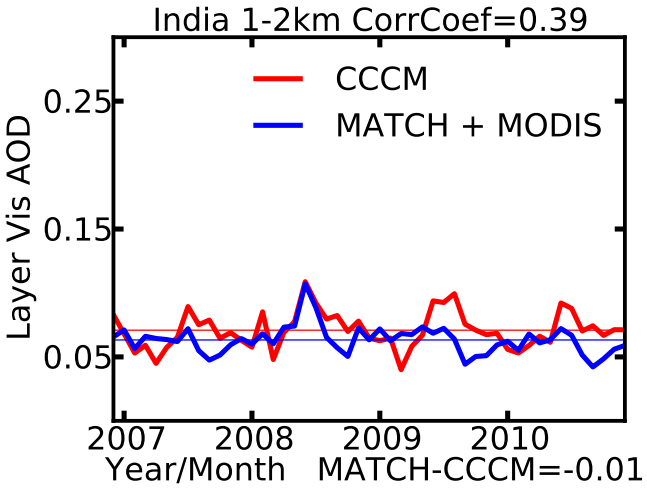
2008
2009
2010
Year/Month
MATCH-CCCM=-0.00


India 1-2km CorrCoef=0.39
Layer Vis AOD
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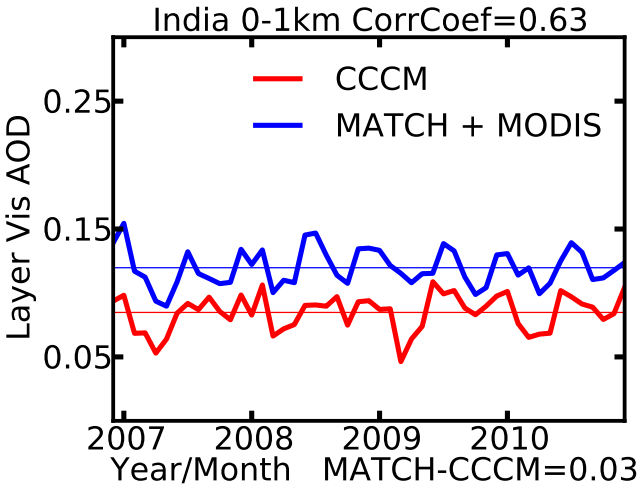
0.15
0.05
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=-0.01


India 0-1km CorrCoef=0.63
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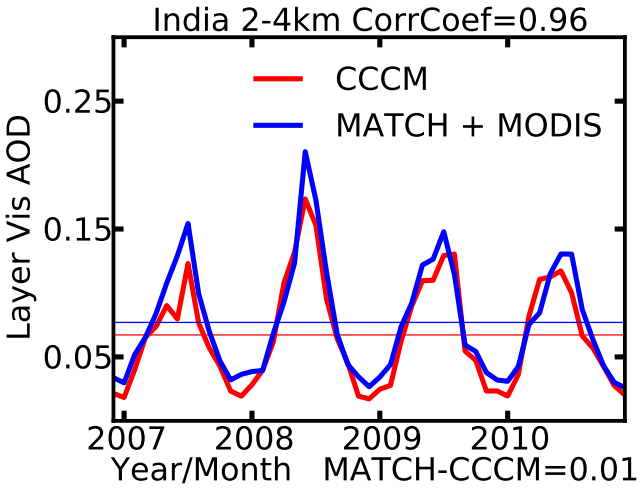
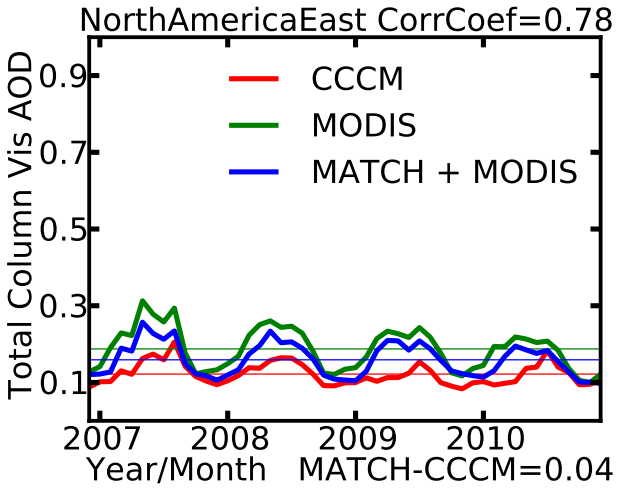
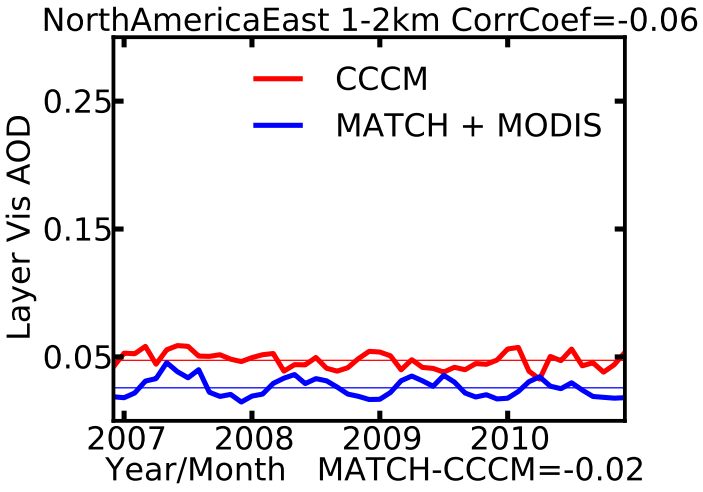
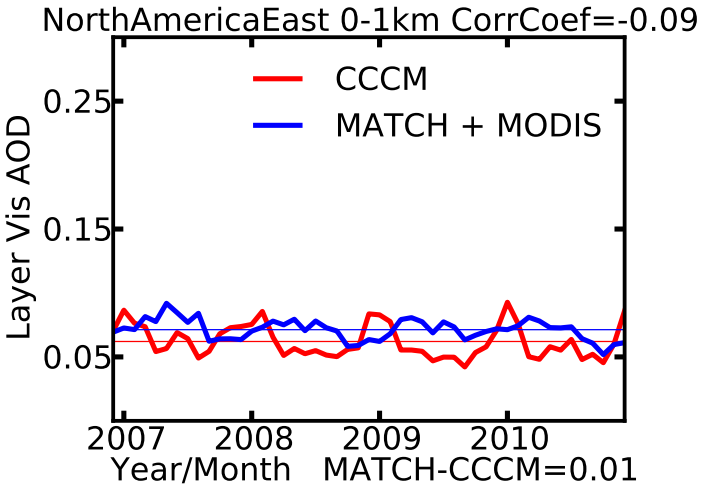
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=0.03

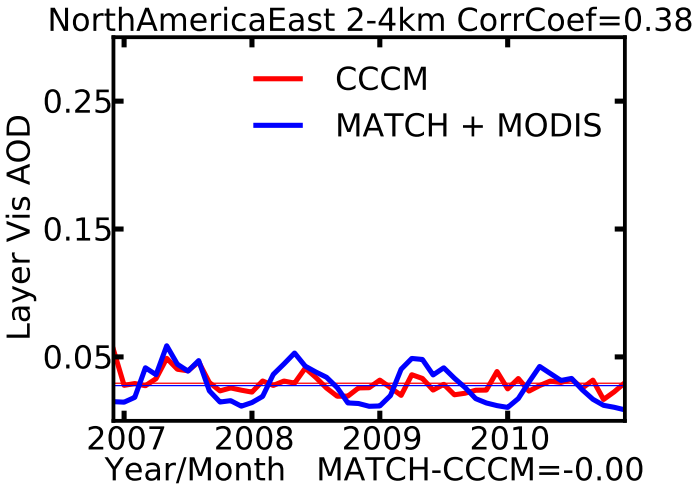

India 2-4km CorrCoef=0.96
Layer Vis AOD
0.25
0.15
0.05
CCCM
MATCH + MODIS
2007
2008
2009
2010
Year/Month
MATCH-CCCM=0.01

NorthAmericaEast

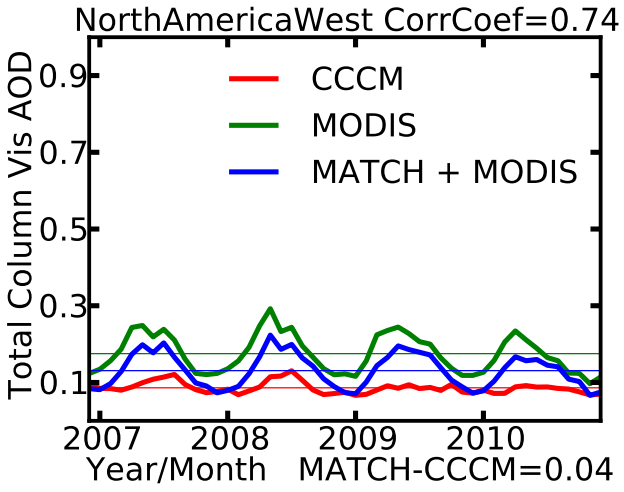


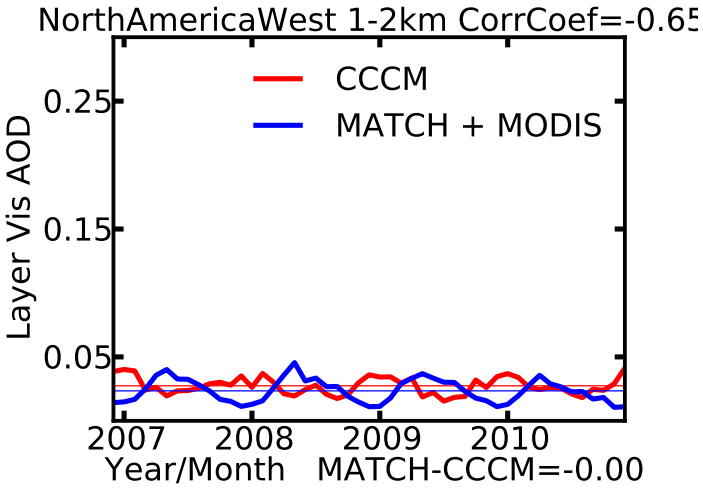


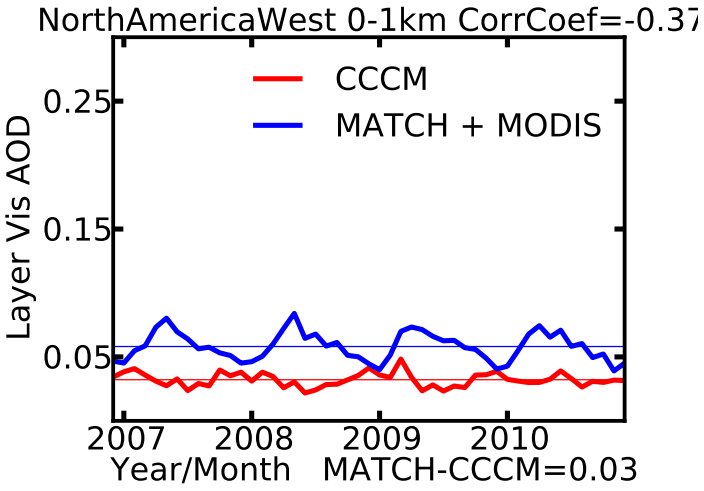


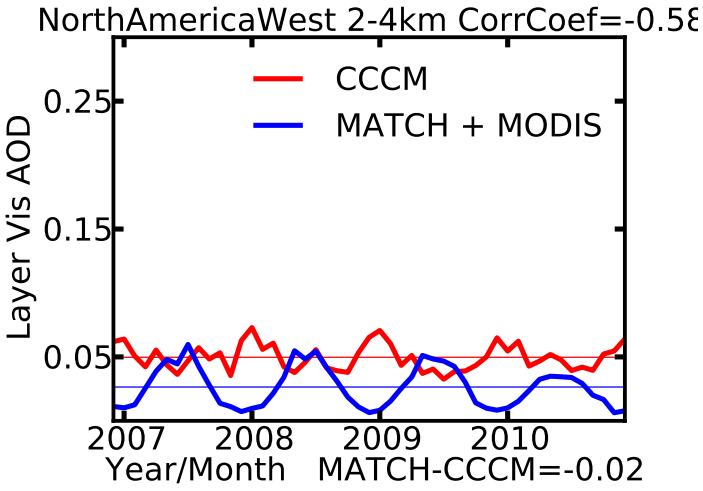


NorthAmericaWest

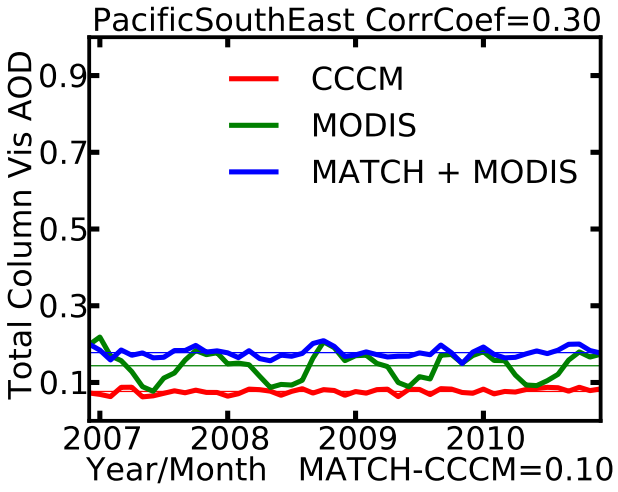


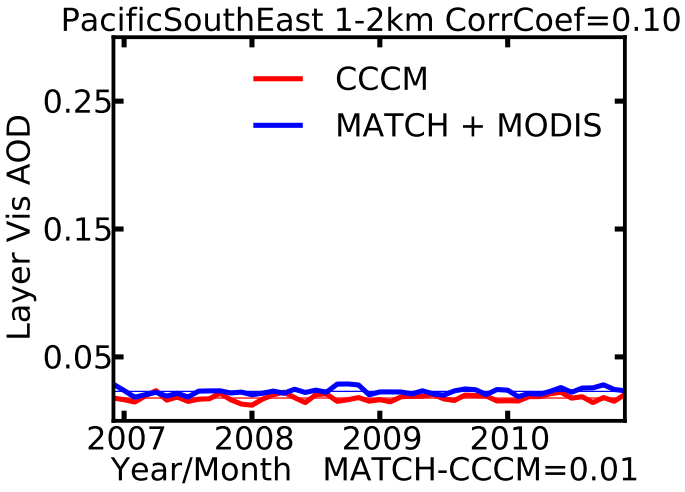


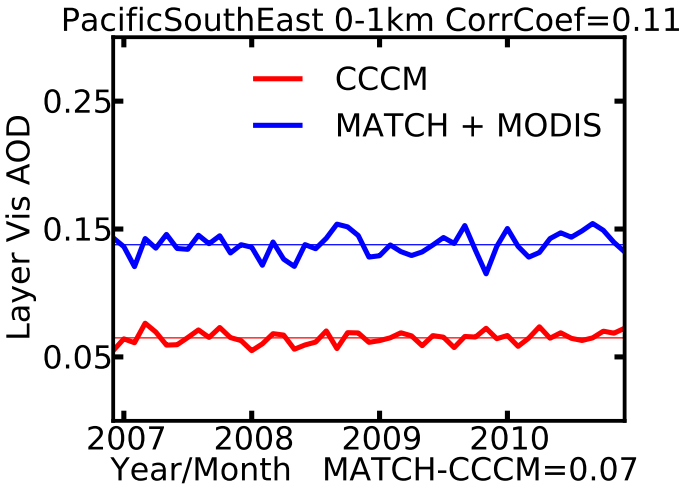


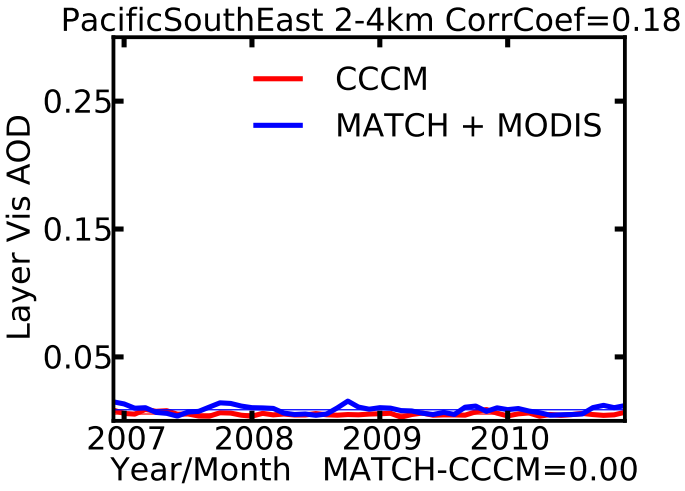


PacificSouthEast









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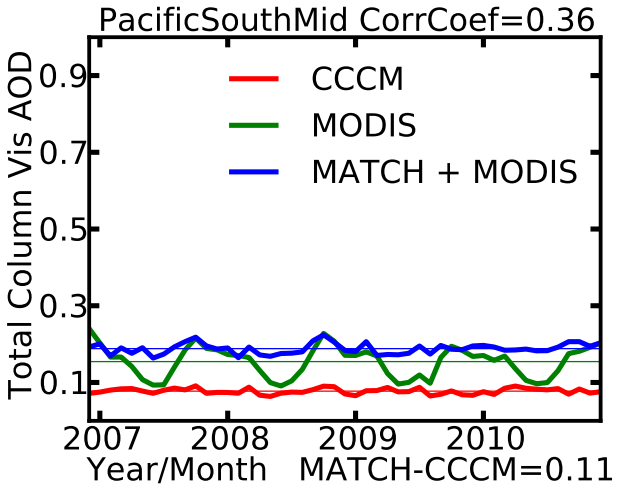
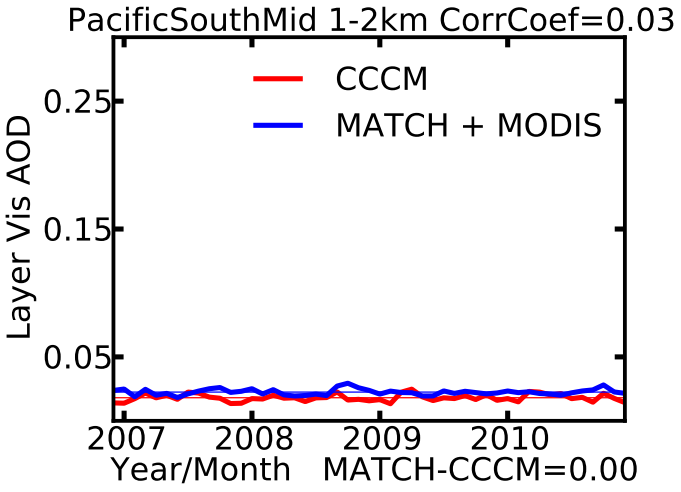
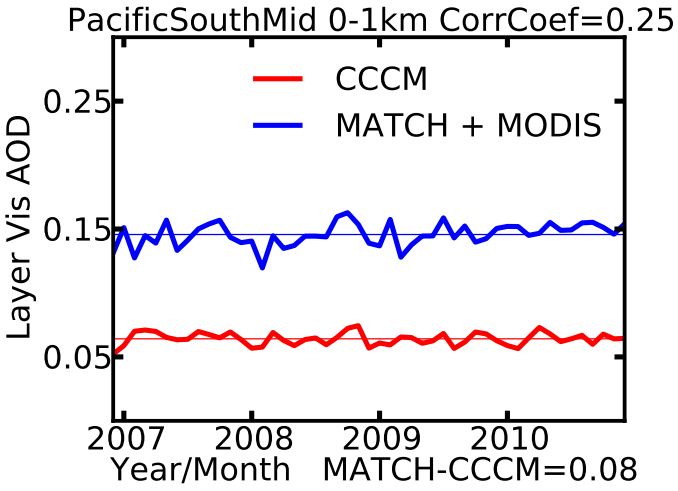
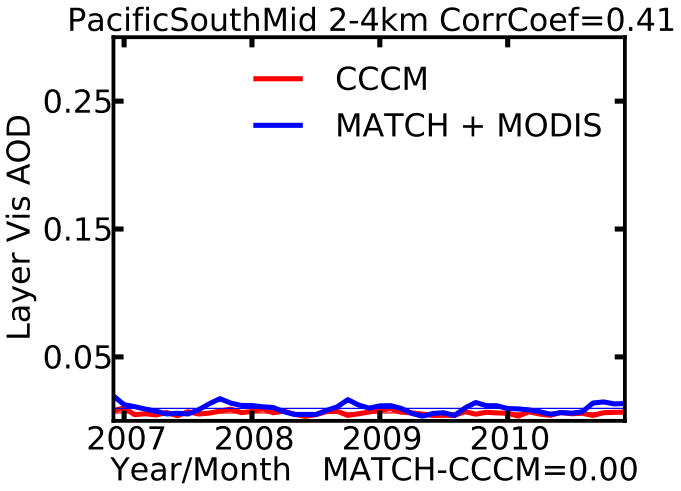
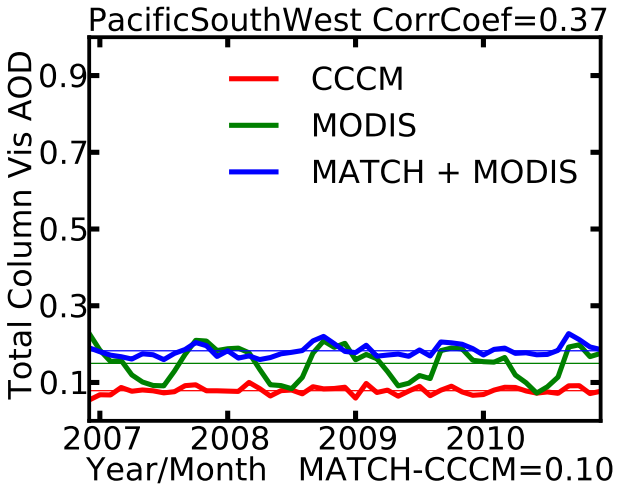


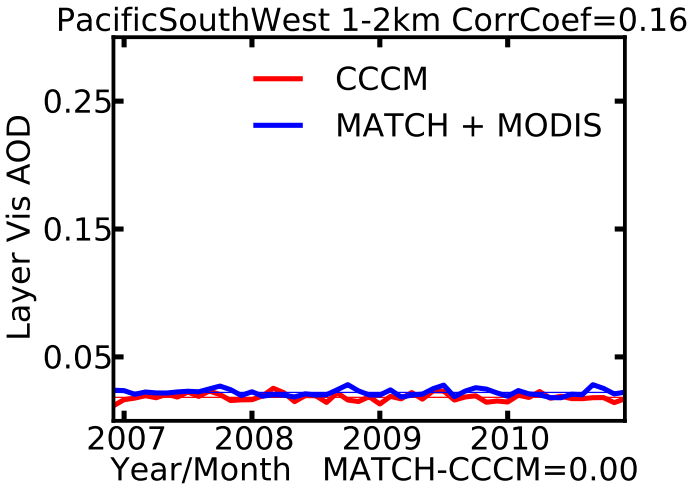


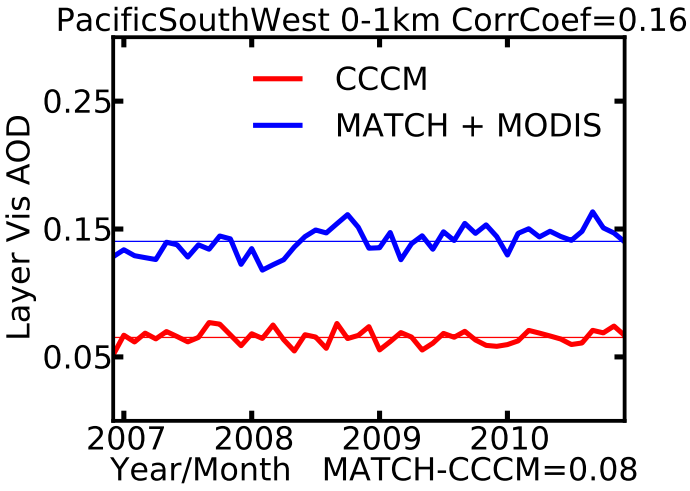


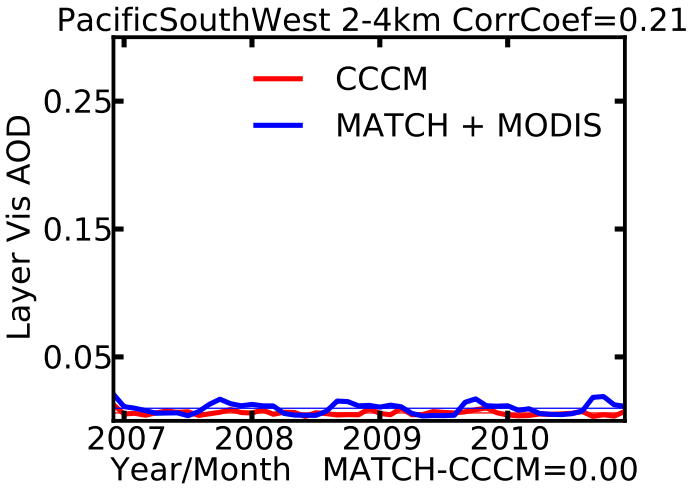


PacificSouthWest

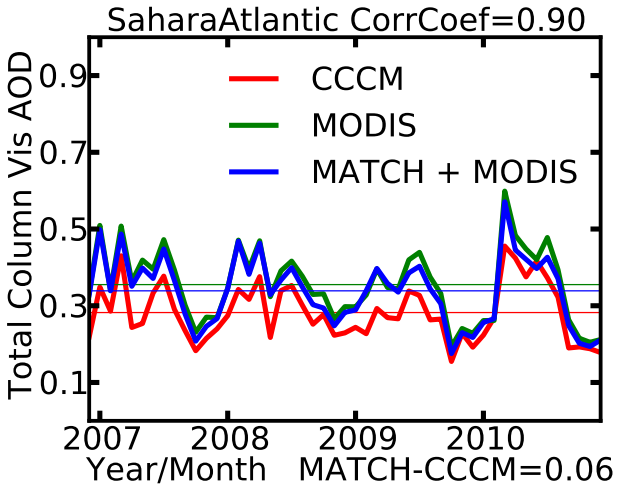


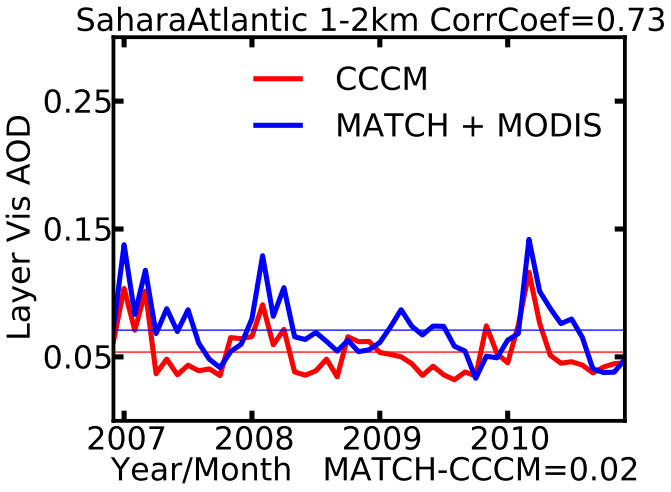


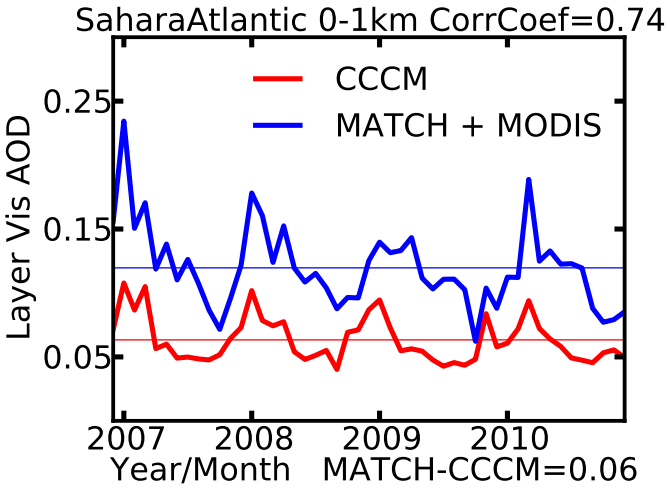


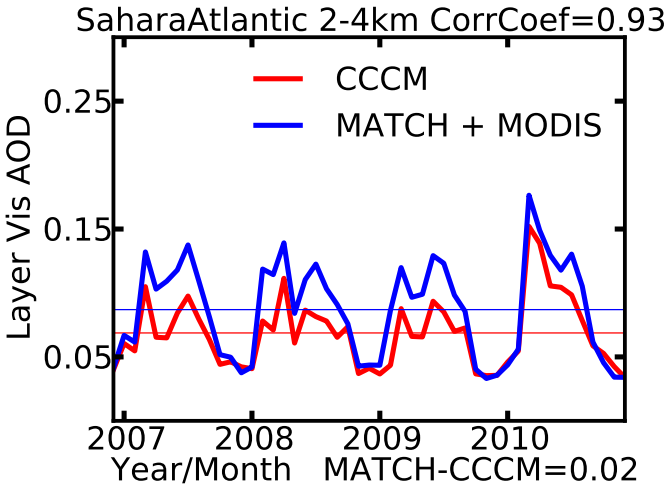


SaharaAtlantic









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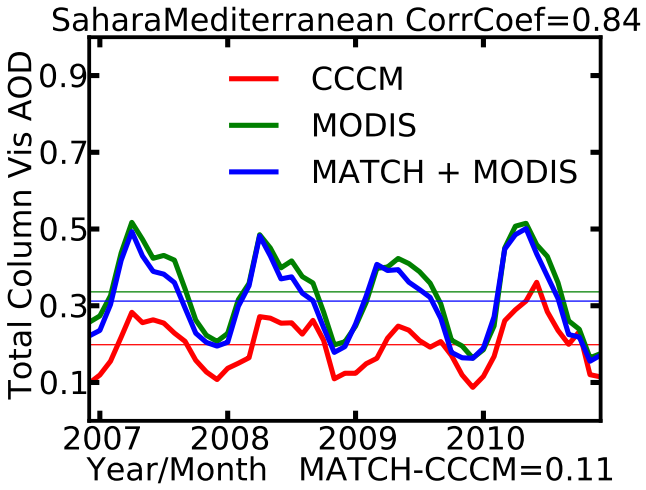
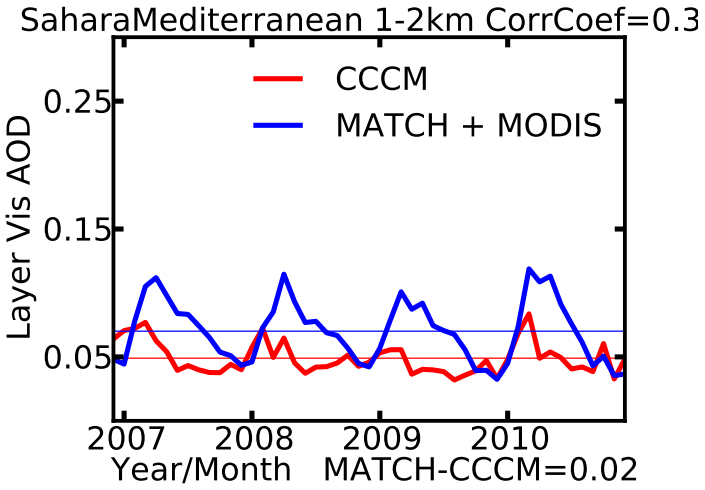
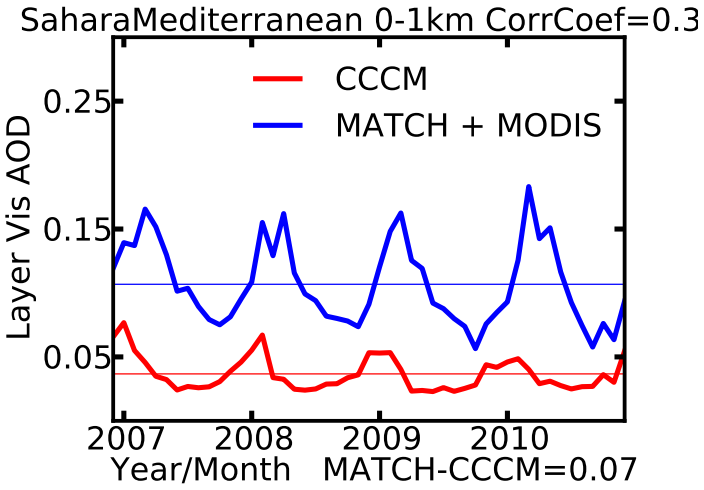
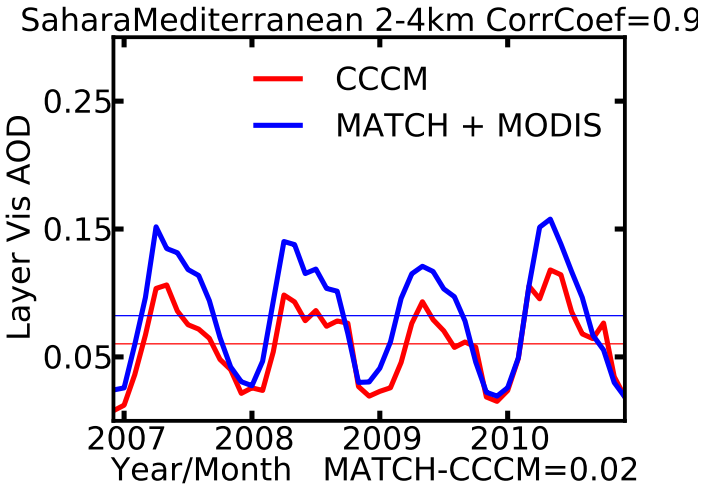
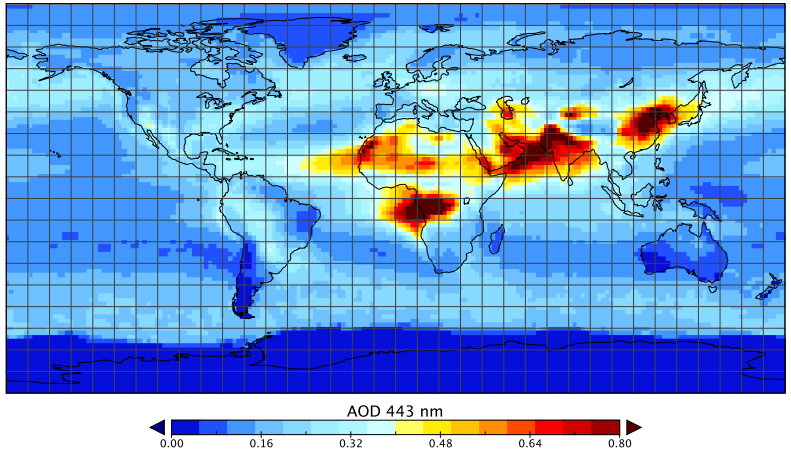




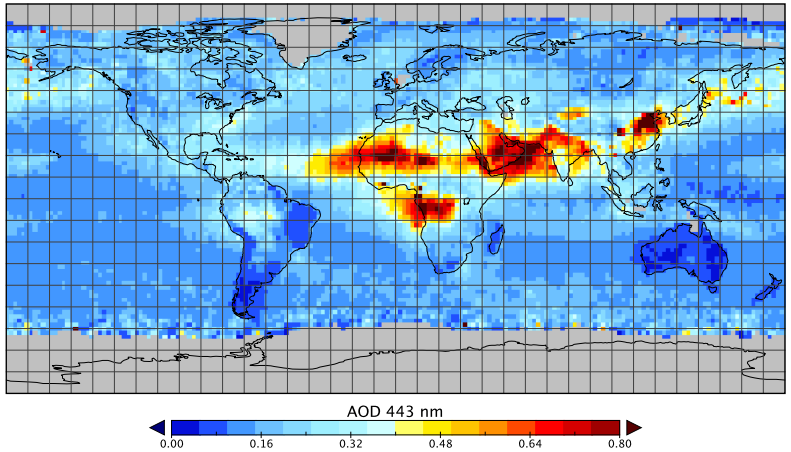




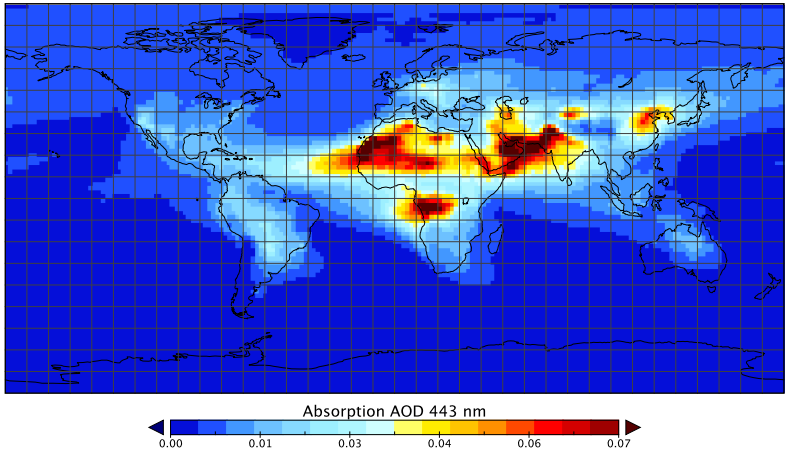
MATCH + MODIS Summer 2007 – 2010



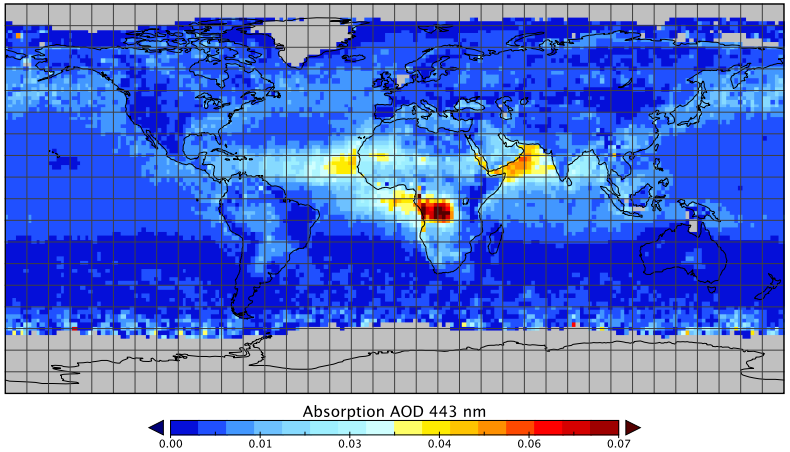
MISR Summer 2007 – 2010



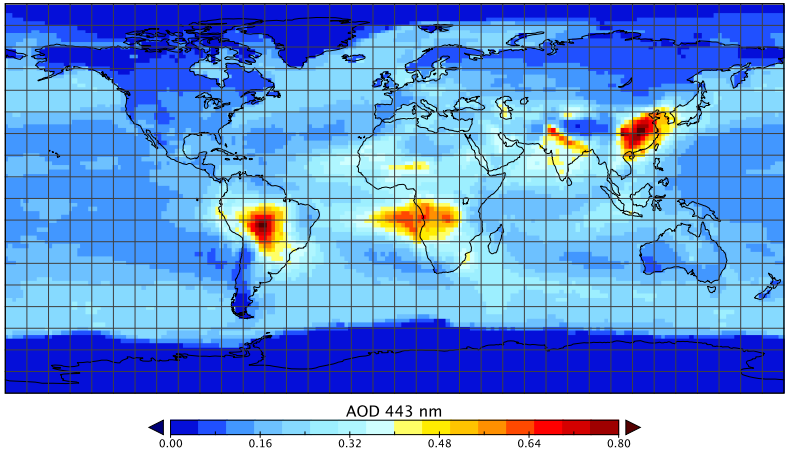
MATCH + MODIS Summer 2007 – 2010



MISR Summer 2007 – 2010



MATCH + MODIS Fall 2007 – 2010



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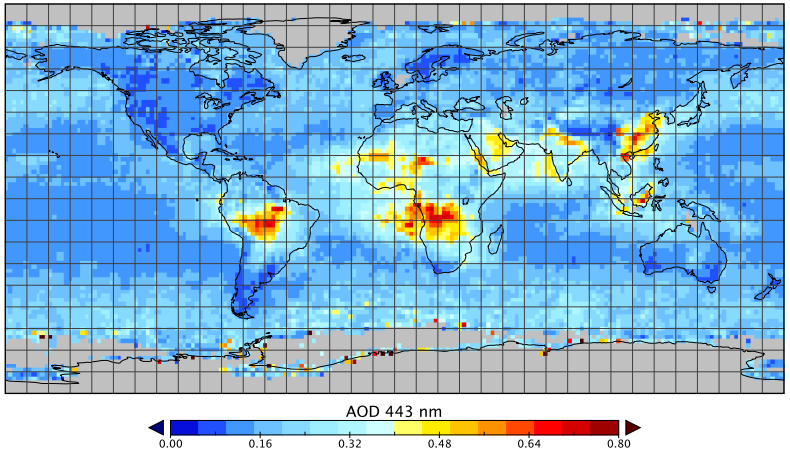

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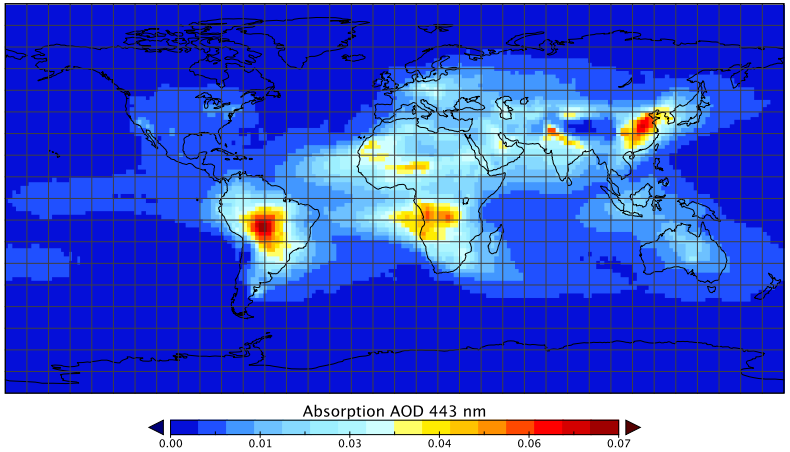

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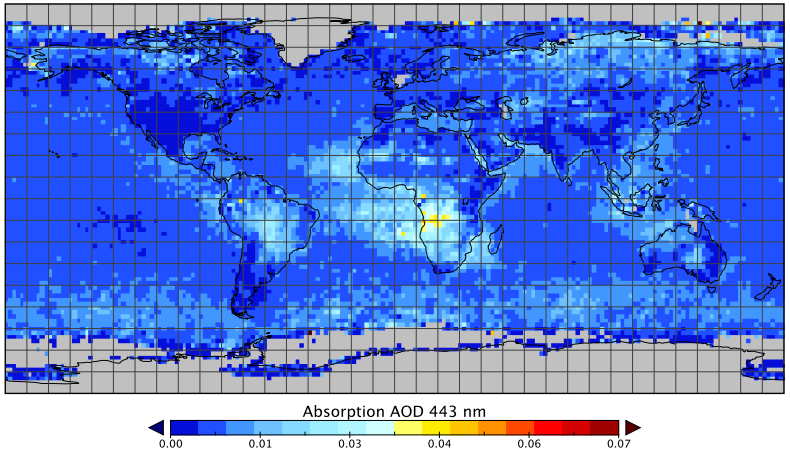
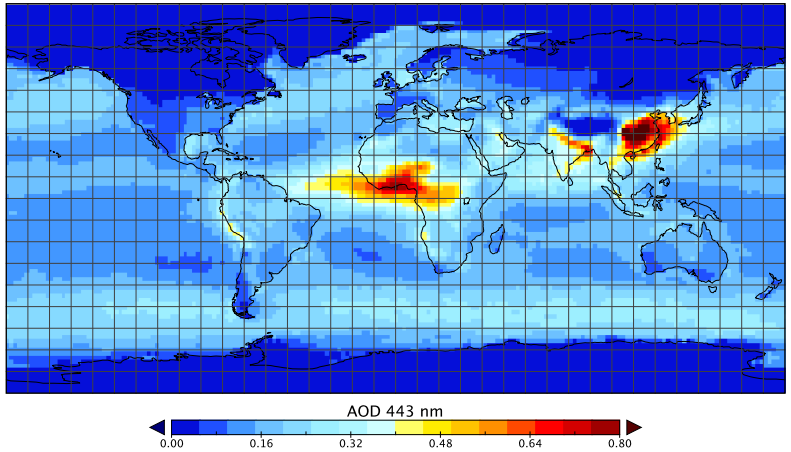


MATCH + MODIS Winter 2007 – 2010



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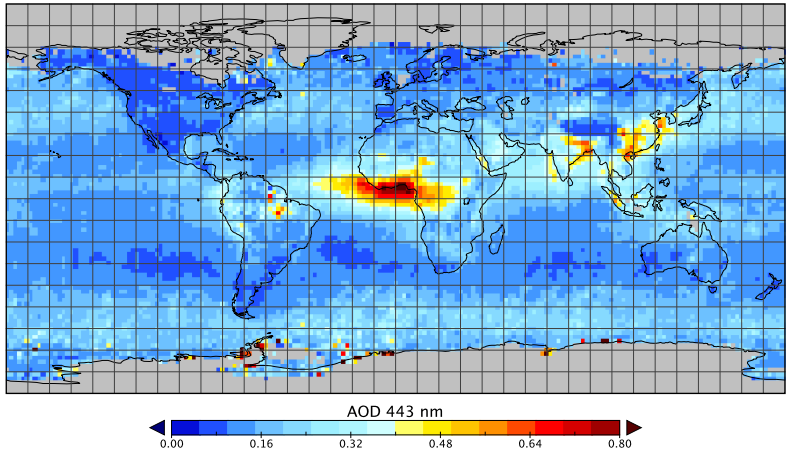

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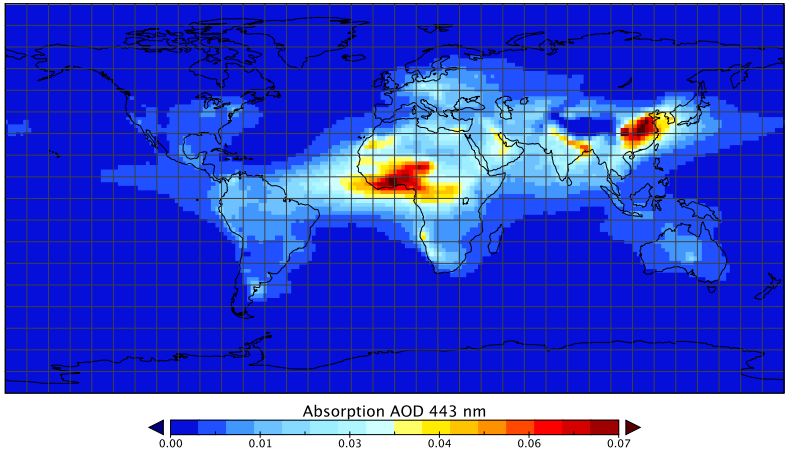

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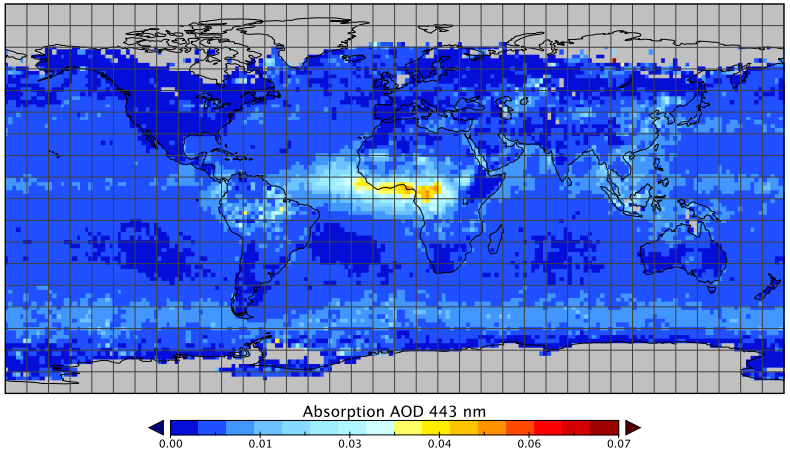
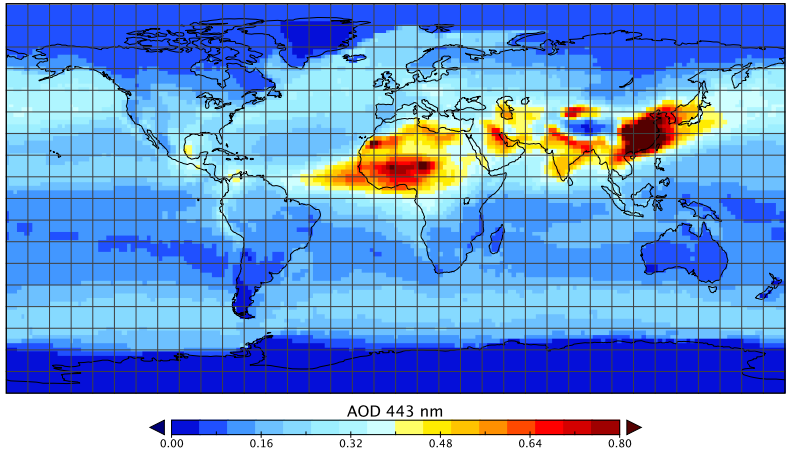


MATCH + MODIS Spring 2007 – 2010



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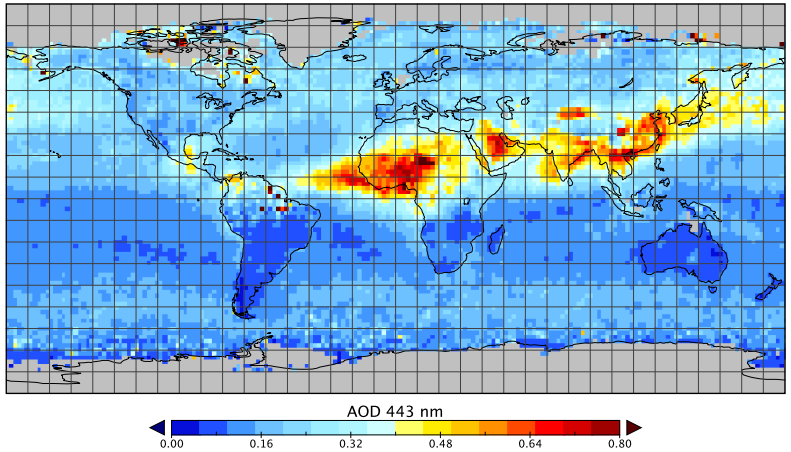
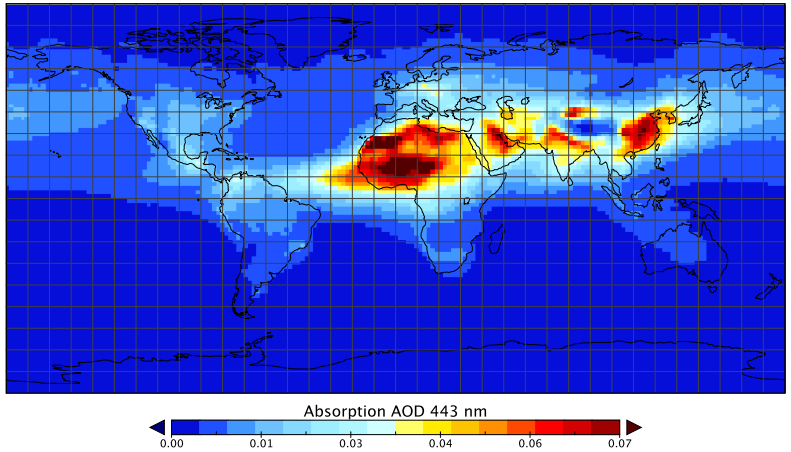


MATCH + MODIS Spring 2007 – 2011



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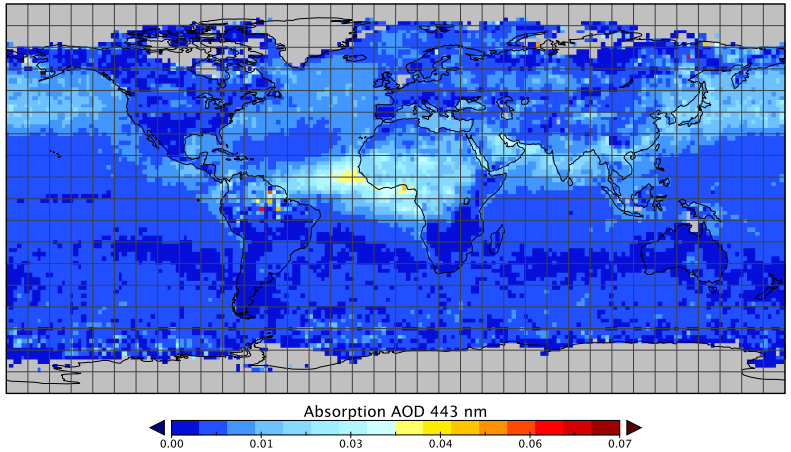

Conclusions

1. MATCH boundary layer AOD $>$ CCCMfor most regions
2. MATCH upper layer AODs $\approx$ CCCM
3. MATCH absorption AOD $>>$ MISR estimate