What are the goals of PACE?

What science questions address PACE goals?

How would PACE address the science questions?
- Instrument requirements
- Mission requirements

Strawman instrument
Strawman mission

Estimated cost

Reports and white papers:
- ACE
- IOCCG
- NRC
- NASA/
  TM2011-2158
  83
What are the Ocean Goals of PACE?

1-Extend specific heritage Earth system data records of ocean color radiometry (Rrs, Chl) over multiple decadal scales.

2 – Observe new and refine existing global ocean products of ocean ecology, biology, and chemistry required to quantify carbon cycles and ecosystem structure, composition and function and their changes over time.

3 – Improve our understanding of the interactions within ocean ecosystems and between the oceans, land and atmosphere.
Atmosphere Corrections for PACE

Present OC atm corrections for MODIS/WiFS/etc
Applies to bands 412 to 670 – Goal: LwN to 5%
Use NIR bands (assume black pixels) to estimate aerosol model and AOD
Subtract aerosol radiance from TOA -> LwN
Other corrections: Rayleigh, surface roughness, non-black NIR (SWIR), vicarious calibration

Outstanding issues with existing OC atm corrections
absorbing aerosols (SSA & vert. profile), poor validation of short wave LwN, requirements on input parameters (O3, H2O, atm press, etc.), accurate source data (MOBY-like), adjacency effects (MTF of the atm), bb
Atmosphere Corrections for PACE

What are quantitative requirements for aerosol corrections?

UV Atm Corr
  UV radiance – use 350 as an “anchor”
  Aerosol type to characterize the “buoyancy” of the “anchor”
  Extend atm corr into the UV
  Can we see LwN 360 380 through Rayleigh atm?
    Modeling study – requirements for ancillary data
  Aerosol source region and type

Future
  Simultaneous atm/oce retrievals
  Land atm corr?
What are the science questions?

How would PACE address the science questions?

What are the instrument requirements?

What are the mission requirements?