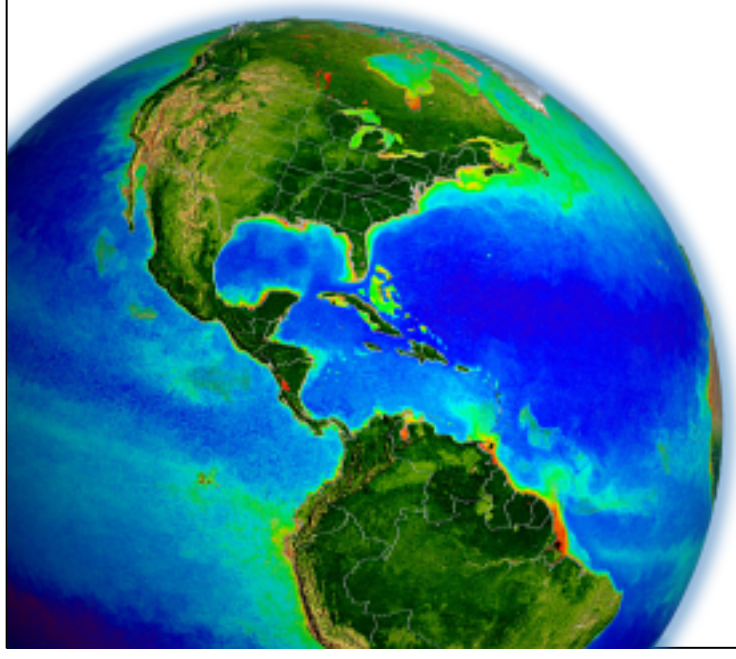
NASA perspectives & support for revision of *in situ* measurement protocols



Jeremy Werdell

NASA Goddard Space Flight Center

Backscattering Protocols Workshop
9-10 March 2015

NASA Ocean Biology & Biogeochemistry Program

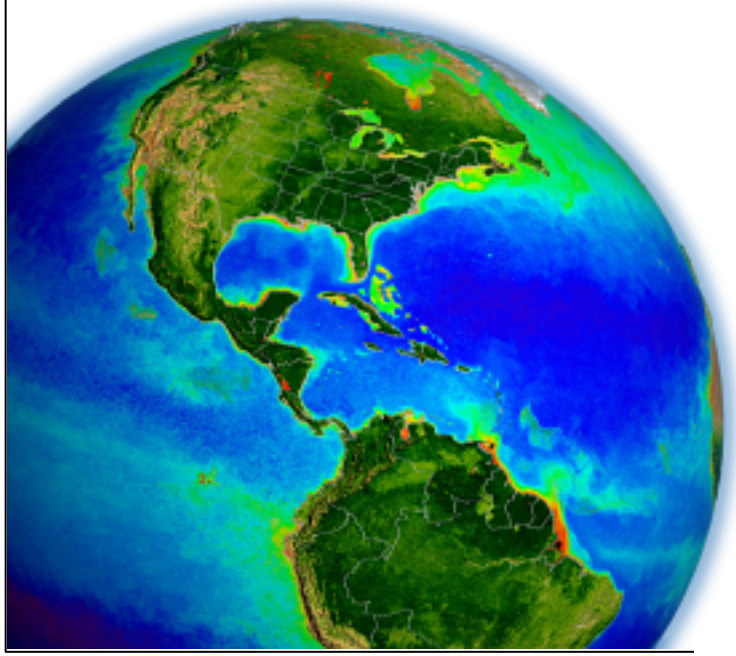
field work funded by OBB Program

QA/QC

by data contributor

by NASA

in situ data submitted to NASA SeaBASS (GSFC) within 1-year



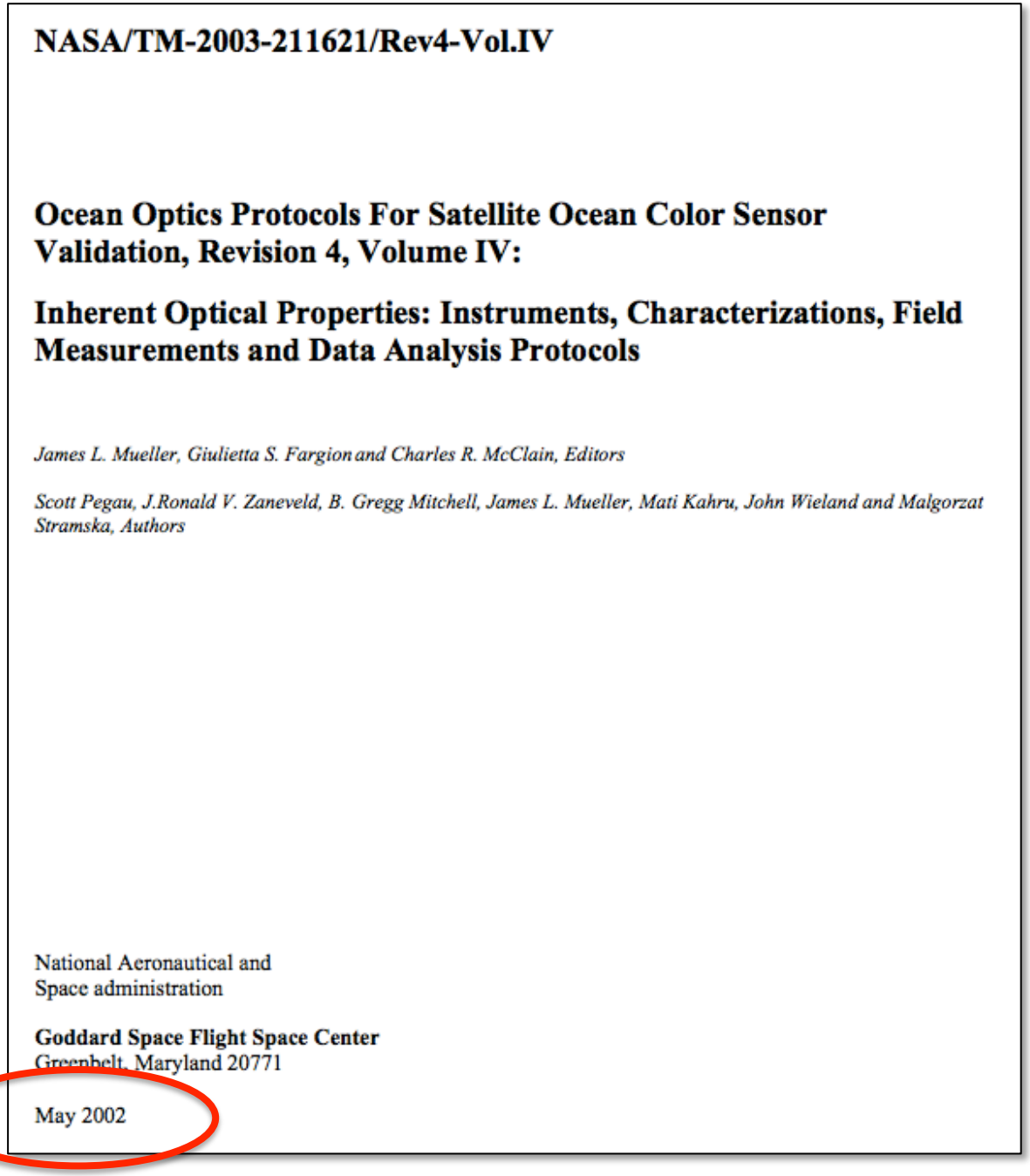
in situ data publicly released

in situ data used to validate satellite data products & to develop / evaluate algorithms

in situ used to calibrate satellite

NASA Ocean Optics Protocols Technical Memoranda series

started in mid-1990's & continued through the SIMBIOS-era



NASA/TM-2003-211621/Rev4-Vol.IV

Ocean Optics Protocols For Satellite Ocean Color Sensor Validation, Revision 4, Volume IV:

Inherent Optical Properties: Instruments, Characterizations, Field Measurements and Data Analysis Protocols

James L. Mueller, Giulietta S. Fargion and Charles R. McClain, Editors

Scott Pegau, J.Ronald V. Zaneveld, B. Gregg Mitchell, James L. Mueller, Mati Kahru, John Wieland and Malgorzat Stramska, Authors

National Aeronautical and
Space administration

Goddard Space Flight Space Center
Greenbelt, Maryland 20771

May 2002

recent NASA involvement

Jun 2012	OOI QA/QC workshop
Oct 2012	OOI QA/QC follow-on workshop @ OOXXI
Oct 2013	CDOM absorption protocols workshop
Jun 2014	Particle absorption protocols workshop
Oct 2014	IOCCG protocols workshop @ OOXXII
Mar 2015	Backscattering protocols workshop
ongoing	IOCCG protocols coordination activity

charge to this workshop group

generate a revised / updated OO protocols document

this will be a snapshot in time; remaining issues to be identified, even if they cannot be addressed under this activity

two versions of the revised protocols document (?):

(1) online, living Wiki-like (IT resources identified)
(2) peer-review and/or NASA T/M (standalone)

what is a sustainable path forward?

many thanks for your participation

protocols & QA/QC metrics are essential

a single entity (e.g., NASA or equivalent) cannot collect sufficient volumes of *in situ* data to satisfy its operational calibration & validation needs

following, flight projects rely on multiple entities to collect *in situ* data

robust protocols for data collection & QA/QC ensures measurements are of the highest possible quality – well calibrated & understood, properly & consistently acquired, within anticipated ranges

robust QA/QC provides confidence in utility & quality of data

recommend invested agencies/institutions facilitate routine activities (workshops, round robins, inter-comparisons) to revisit QA/QC protocols

the scope of the problem & questions have grown

an example considering AOP measurements …

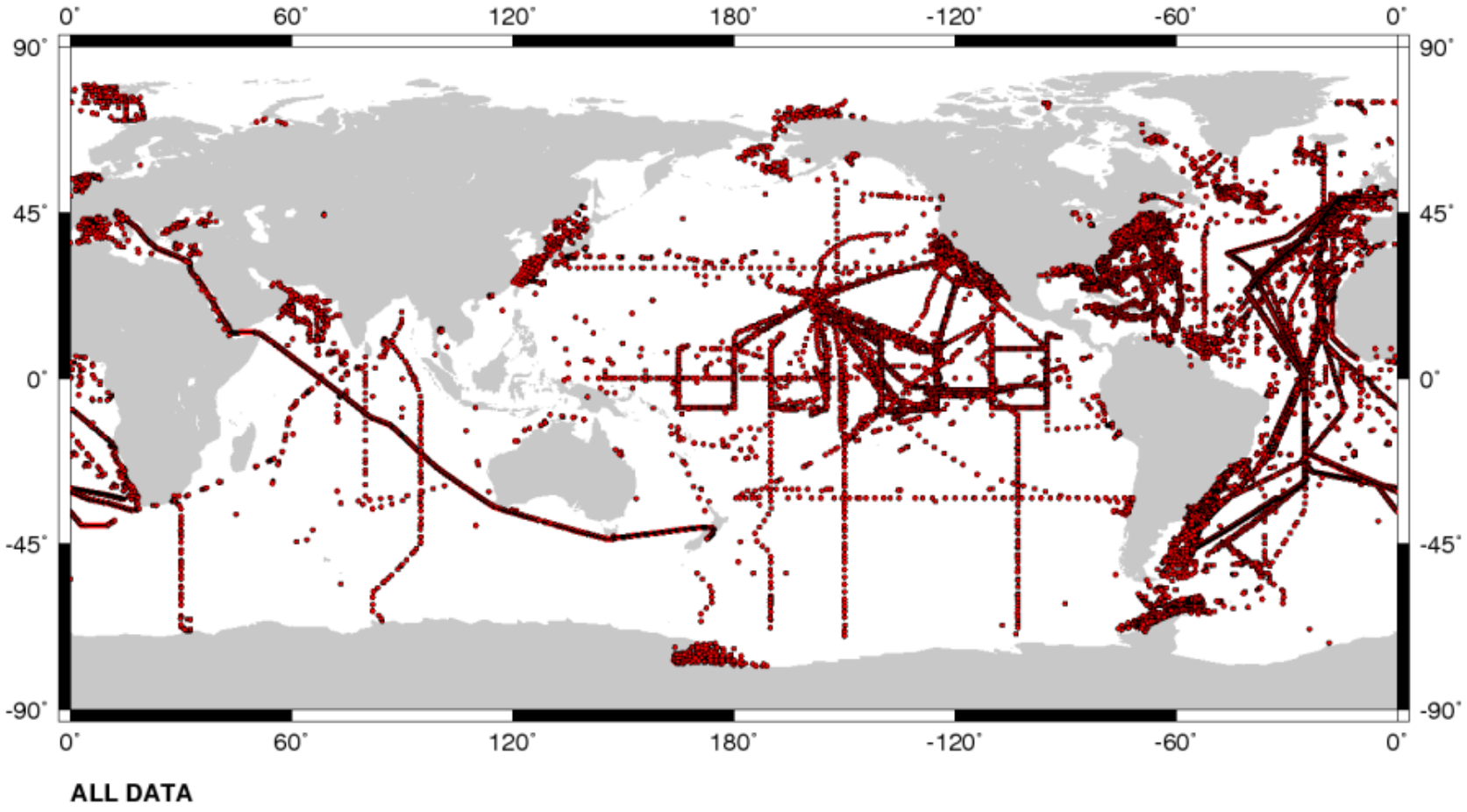
AOP instrumentation in SeaBASS or available commercially:

- many companies & instruments
  Biospherical, Satlantic, HOBI, Trios/Ramses, DALEC, SIMBAD-A, ASD, Spectron, custom
- many platforms & deployment strategies
  profilers, buoys, above-water (ship, permanent, hand-held), gliders, AUVs

dynamic range of problem set is growing:

- new missions emphasize research in shallow, optically complex water
- spectral domain stretching to UV and SWIR
- new missions have immediate, operational requirements

SeaBASS @ seabass.gsfc.nasa.gov



used in algorithm development & satellite data product validation