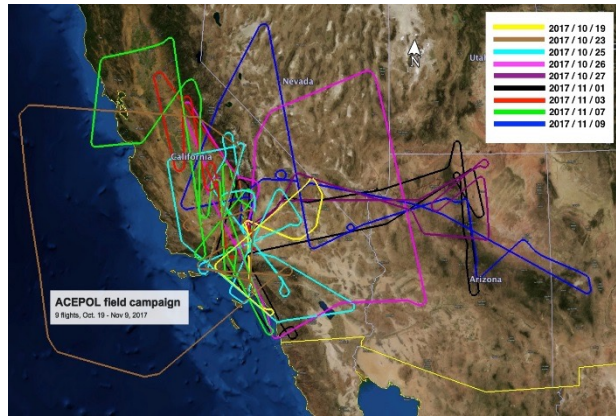


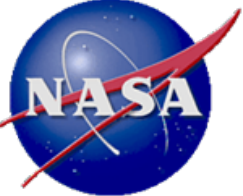
# Polarimeter and Lidar evaluation: the ACEPOL field campaign

Kirk Knobelspiesse<sup>1</sup>, Richard Ferrare<sup>2</sup>, Otto Hasekamp<sup>3</sup>, Felix Seidel<sup>4</sup>, Arlindo da Silva<sup>5</sup>, Hal Maring<sup>4</sup>

<sup>1</sup>Ocean Ecology Laboratory, NASA GSFC, <sup>2</sup>NASA LaRC, <sup>3</sup>SRON, <sup>4</sup>NASA HQ, <sup>5</sup>GMAO, NASA GSFC



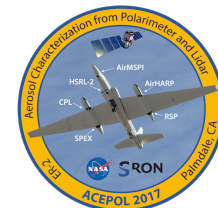
Four multi-angle polarimeters and two lidars were deployed on the ER-2 for the Aerosol Characterization from Polarimeter and Lidar (ACEPOL) field campaign. ACEPOL data will test instrumentation and algorithms for remote sensing of clouds and aerosols, relevant to planned missions such as ACE, PACE and MAIA.



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Da Silva, A. M., Maring, H., Seidel, F., Behrenfeld, M., Ferrare, R., and Mace, G.: Aerosol, Cloud, Ecosystems (ACE) Final Study Report, National Aeronautics and Space Administration, <https://ntrs.nasa.gov/>, NASA/TP—20205007337, 2020.

Also see the NASA AFRC website: [https://www.nasa.gov/centers/armstrong/features/prototype\\_space\\_sensors.html](https://www.nasa.gov/centers/armstrong/features/prototype_space_sensors.html)

## Technical Description of Figures:

**Left:** Pilot's photo from the ER-2, during an overflight of smoke from controlled burns in Arizona. Photo by Stu Broce.

**Inset:** ACEPOL logo, showing location of the two lidars (CPL, HSRL-2), and four multi-angle polarimeters (AirMSPI, AirHARP, RSP, SPEX-airborne) on the ER-2.

**Top right:** Tracks for the nine ACEPOL science flights. A total of 41 flight hours were flown between 19 Oct. and 9 Nov., 2017.

**Bottom right:** A portion of the ACEPOL science, engineering, aircraft and project team following a successful flight.

**Scientific significance, societal relevance, and relationships to future missions:** ACEPOL targeted a wide variety of scene types (desert, cropland, urban, ocean) and conditions (cloudy, clear, polluted, smoky, pristine) to provide the ideal test, comparison and development dataset for polarimeter and lidar observations of aerosols, clouds, and the ocean. The polarimeters can be considered prototypes for designs that may be used for the Decadal Survey recommended ACE mission, and are similar to polarimeters that will be used for the PACE and MAIA missions. ACEPOL also performed underflights of the CALIPSO instrument for calibration and evaluation. Funding was provided by the ACE mission, by the Netherlands Institute for Space Research (SRON) and the CALIPSO mission.