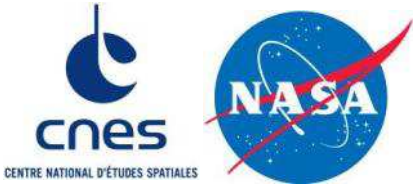




# *Informations générales CALIPSO*

*J. Pelon*

# *Infos*

- **Informations concernant la mission CALIPSO**

  - Fonctionnement

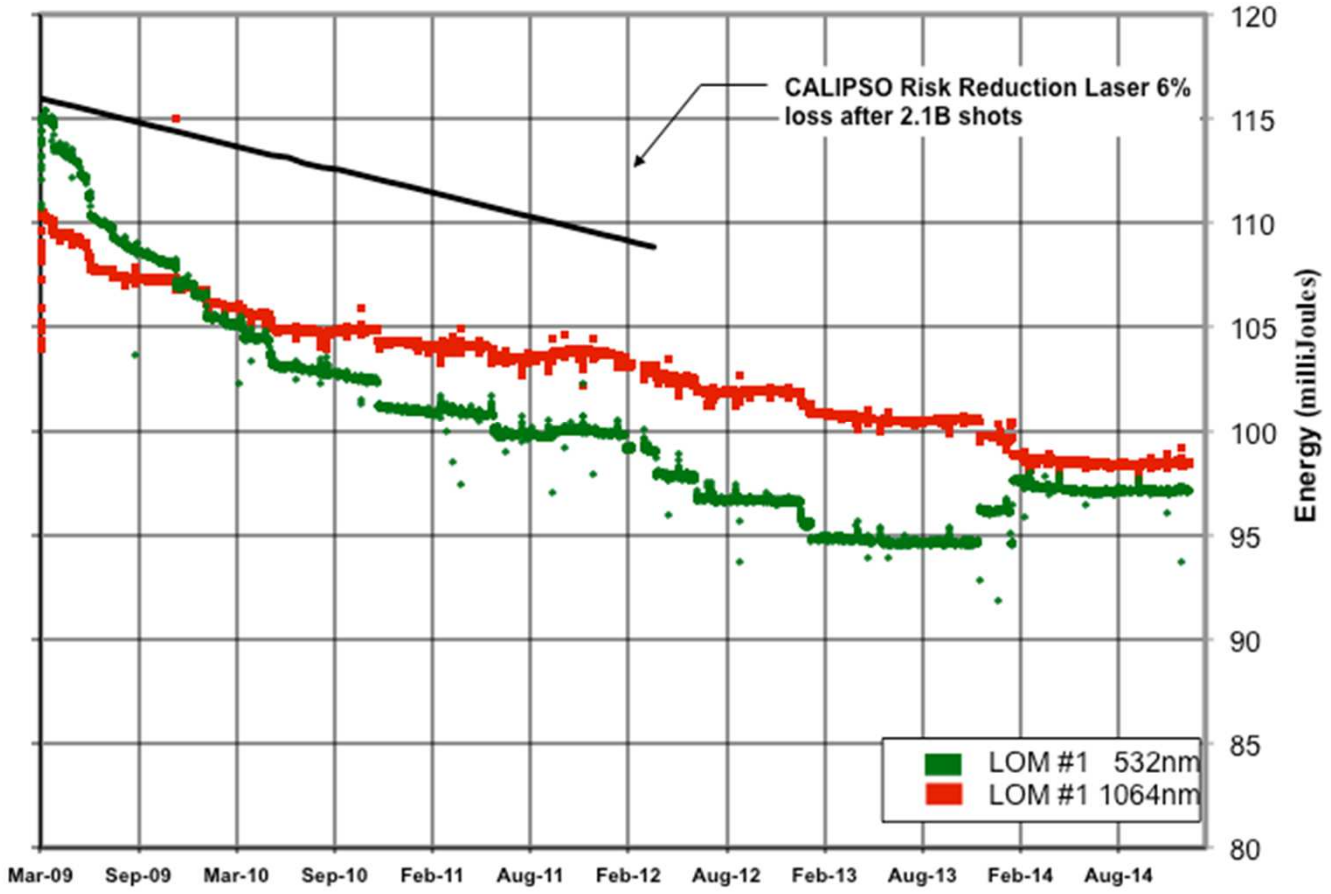
    - Instrument (laser) OK
    - durée de mission possible : 2017 ou jusqu'à 2020 ?

  - Prolongation de Mission 2016-2017

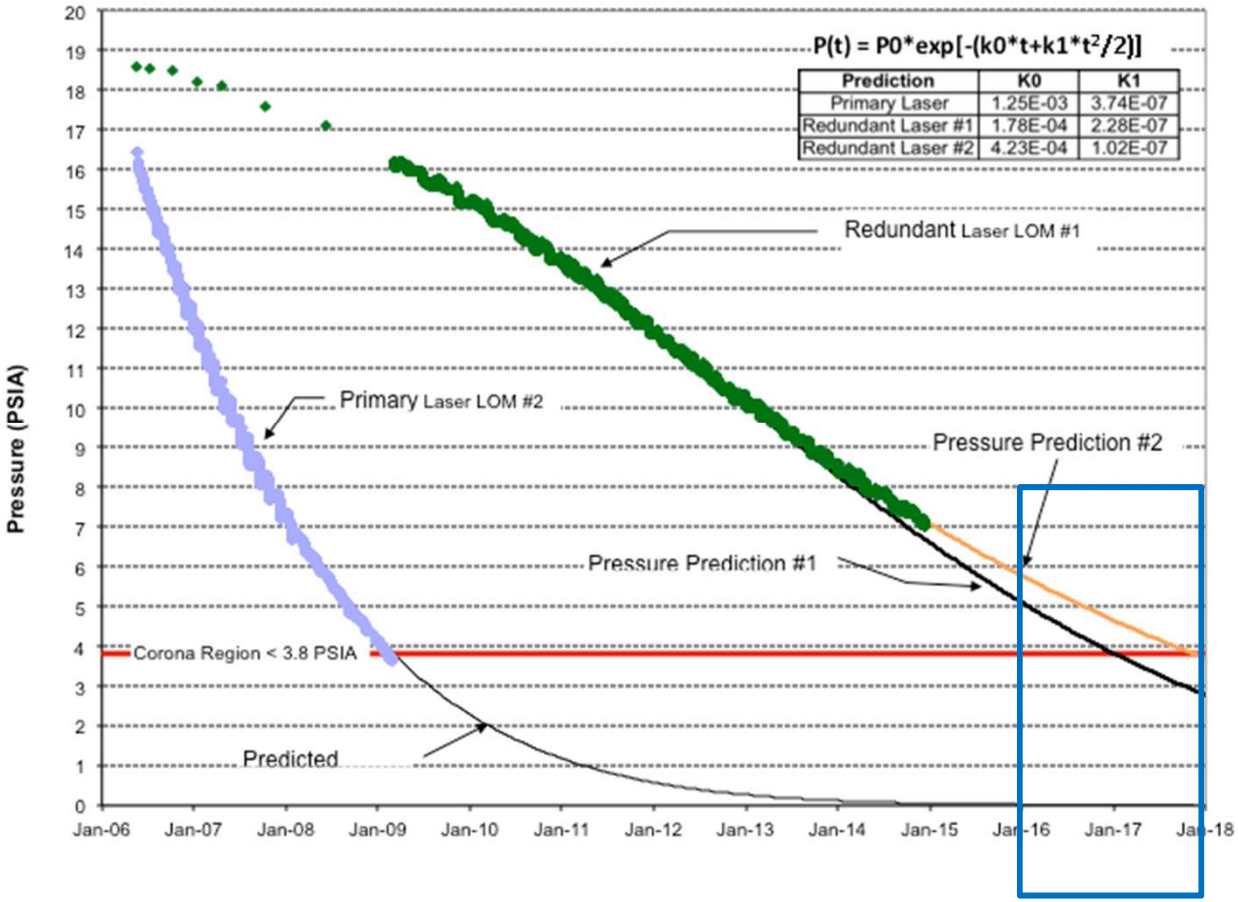
- Mise en place de la nouvelle version V4 des données CALIPSO

# *Bon fonctionnement de la charge utile en général et de la source laser en particulier*

→ Stabilité des performances du laser après le réajustement de début 2014



# *Fonctionnement de la source Laser actuelle*

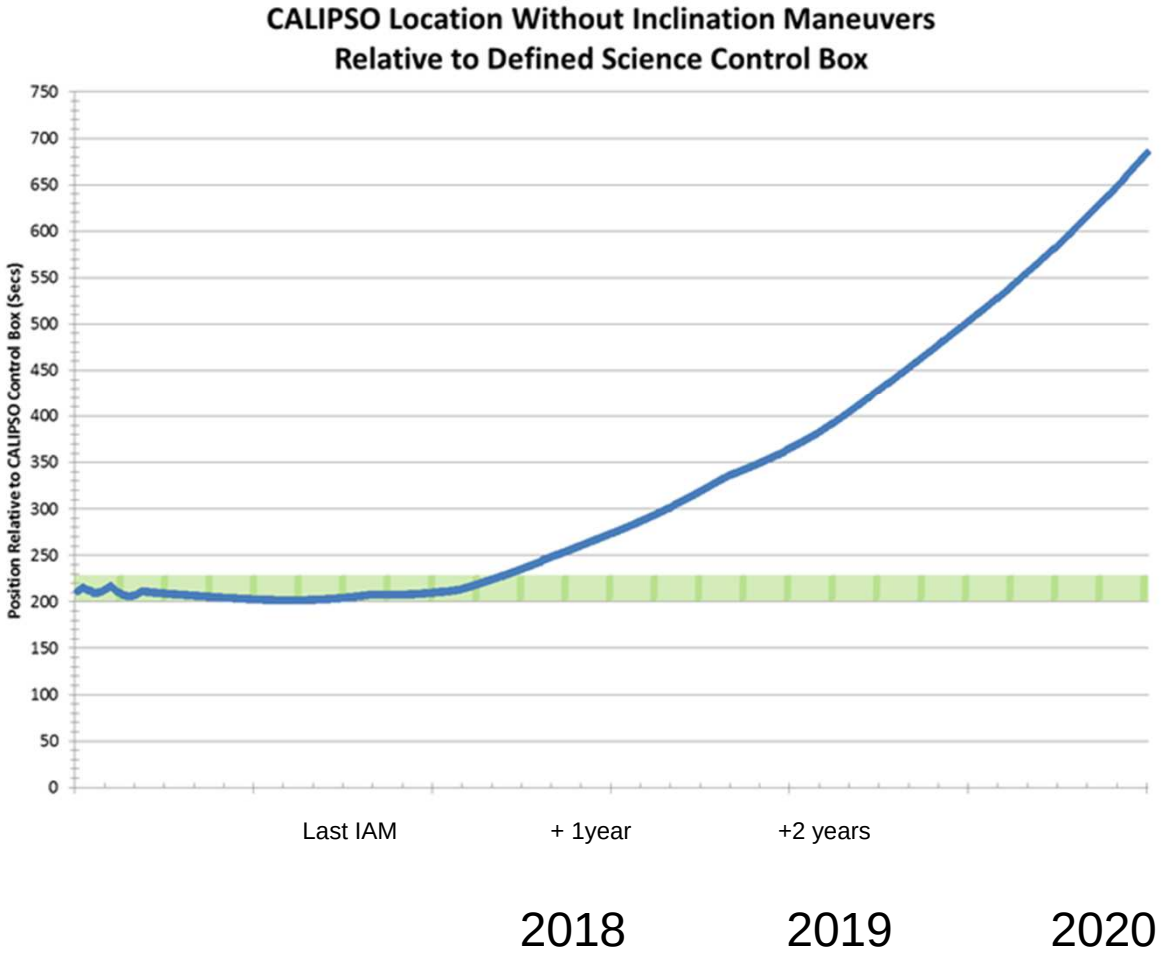



**Demande de prolongation de mission : 2016 et 2017**

Pas de problème majeur attendu avant la fin 2017

# CALIPSO drift (705 km)

- Dernière manoeuvre pour maintenir CALIPSO dans l'A-Train : printemps 2017
- La plateforme va ensuite dériver en s'écartant de MODIS avec des heures plus élevées de passage à l'équateur
- Il y a assez d'ergol pour 3 ans et manoeuvre d'évitement de CloudSat




Cloudsat devrait rester dans le train jusqu'en 2018 et ensuite dériver avec CALIPSO

# *Infos*

- Informations concernant la mission CALIPSO

    - Fonctionnement

        - Instrument (laser)
        - durée de mission

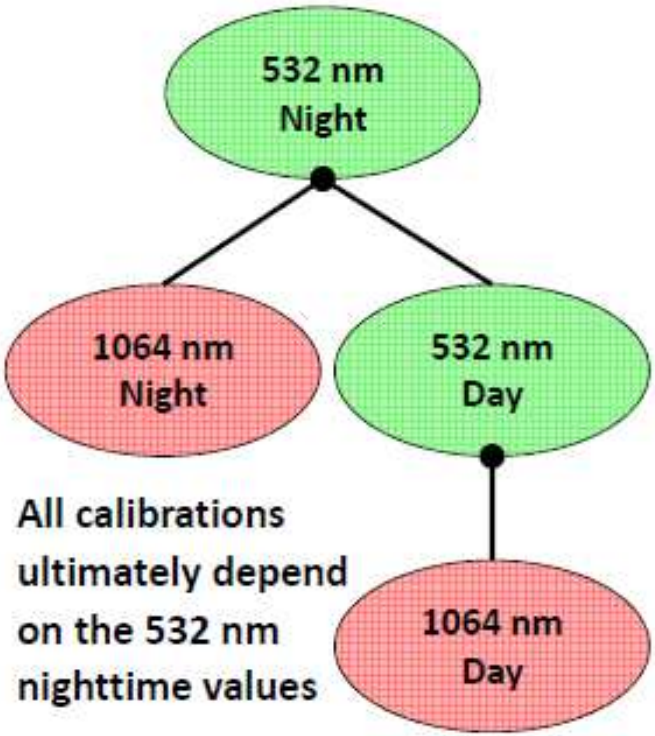
- Prolongation de Mission

- **Mise en place de la nouvelle version V4 des données CALIPSO (REVEX 2014 et suivi)**

# Nouveaux étalonnages V4 L1

## Version 4 Calibration Architecture

### Dependencies




All calibrations ultimately depend on the 532 nm nighttime values

### ~~Version 3~~ Version 4

**532 nm Night**

- Molecular normalization, ~~30-34 km~~ 36-39 km over multiple granules

**532 nm Day**

- Night-to-Day calibration transfer ~~factors computed from level 2 "clear air" results at 8-12 km~~. computed at 400 K potential temperature surface

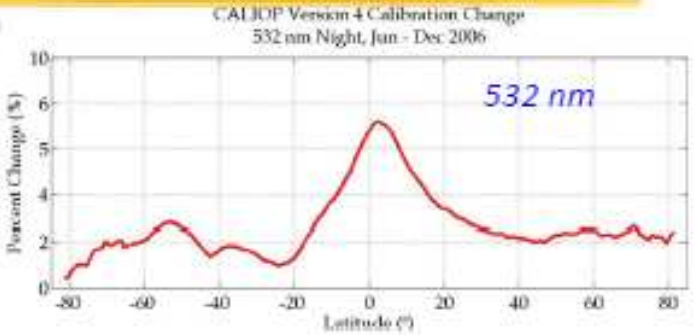
**1064 nm Day & Night**

- ~~Granule mean~~ 532 nm-to-1064 nm scale factors calculated as functions of granule-elapsed time over multiple granules

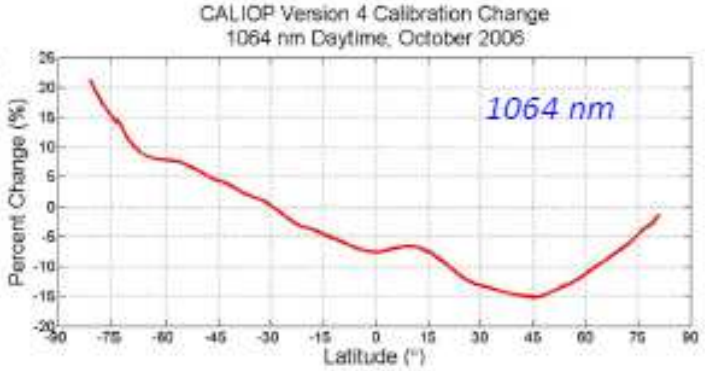
# *Améliorations avec V4 L1 (disponible)*

## CALIOP Level 1 V4 Improvements

- Significant revision to CALIOP 532 nm calibration algorithm completed
  - Removed impacts from stratospheric aerosol (biases of ~ 5% in tropics)
  - Filtered spurious noise spikes – especially near South Atlantic Anomaly
  - Improved calibration near day/night transitions
  - Applied detector baseline slope corrections to improve high-altitude daytime calibration by ~40%
- First major improvement to CALIOP 1064 nm calibration procedure
  - Added more robust calibration transfer techniques from 532 nm using cloud features identified with CALIPSO Imaging Infrared Radiometer (IIR)
  - Removed instrument artifacts believed to be caused by thermal stresses to lidar boresight alignment (up to 35% variations along orbit)
- Expected Outcomes
  - Stable calibration record (removed day-night, seasonal, and residual volcanic aerosol signals)
  - Improved detection capabilities and reduced uncertainties in Level 2 products
  - Improved calibration enables reliable use of 1064/532 color ratio in Level 2 classification algorithms




*Figures show the relative averaged change in the CALIOP calibrated signal realized with Version 4 algorithms compared to Version 3*



# *Nouvelle versionV4 L2 (printemps 2016)*

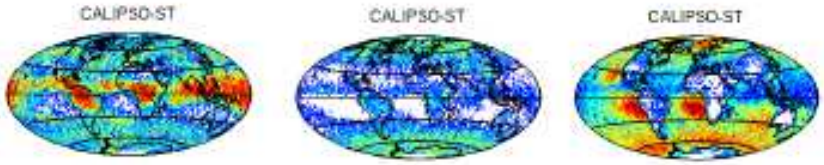
## Desired Level 2 Improvements

| Category | Tasks |
|---|---|
| Cloud-Aerosol Discrimination (CAD) | Create new Probability Distribution Functions<br>apply CAD to stratosphere<br>apply CAD to 1/3 km layers<br>fix high alt. smoke to cirrus<br>add 1/3-km to 5-km |
| Surface Detection | new surface detection algorithm<br>fix negative surface spikes |
| Cirrus Retrievals | new lidar ratios<br>remove threshold from Quality Code 2 parameter<br>opaque retrievals |
| Aerosol Typing | elevated marine<br>Dust/Pollution Dust errors<br>$R_{532}$ dust scaling |
| Lidar view-angle step change | Ice/Water phase<br>extinction retrievals of HOI<br>output I/W phase diagnostic codes |
| Miscellaneous | new aerosol lidar ratios and dust<br>New Ice Water Content parameterization<br>cloud subtype bug |

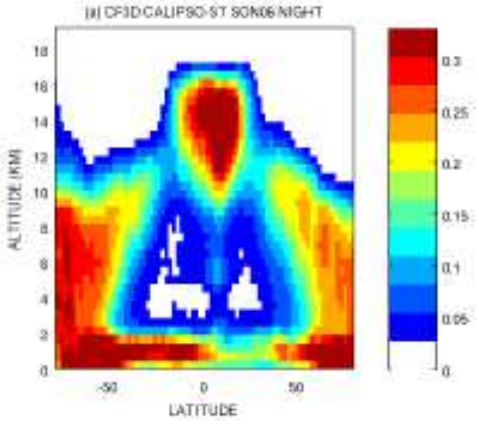
# Nouvelles données avec V4

## New Level 3 Cloud Product

- A limited Level 3 cloud product has been developed for comparison with the GOCCP product
  - ✓ Contains 3D cloud occurrence, cloud ice-water phase
  - ✓ 480 m x 2° x 2°, 2006-2007 only
- Full Level 3 cloud product being planned, for release after V4 Level 2
  - ➢ Add more parameters:
    - ✓ optical depth, IWC
    - ✓ De, IWP from IIR retrievals
    - ✓ Co-variations of lidar and IIR properties
- Analysis initiated to mature design requirements




High Mid Low



# Nouvelles données

- Produit PSC (en place)
- Mise à jour du produit Aerosols L3 V3 (printemps 2015)
- Nouveaux produits aérosols stratosphériques  (automne 2015 … si V3)
- Mise à jour IIR L1 (automne 2015)

Après V4 :

- Produits IIR L2 V4 (automne 2016)
- Aerosols L3 V4 (automne 2016)
- Produits Nuages CALIOP + IIR L3 V4 (automne 2016)