



Puerto de la Cruz, Tenerife, Canary Islands, Spain | 18–23 March 2018

**Chapman Conference on Stratospheric Aerosol in the post-Pinatubo Era:  
Processes, Interactions and Importance**

**Conveners**

Terry Deshler  
University of Wyoming

Larry Thomason  
NASA Langley Research Center

Mian Chin  
NASA Goddard Space Flight Center

**Program Committee**

Emilio Cuevas-Agulló  
Izana Atmospheric Research Center

Christine Bingen  
Royal Belgian Institute for Space  
Aeronomy

Markus Hermann  
Leibniz Institute for Tropospheric  
Research

Marc von Hobe  
Forschungszentrum Jülich

Stefanie Kremser  
Bodeker Scientific

Markus Rex  
Alfred Wegner Institute Helmholtz-  
Zentrum für Polar und  
Meeresforschung

Alan Robock  
Rutgers University  
Claudia Timmreck  
Max-Planck Institute for Meteorology

Jean-Paul Vernier  
NASA Langley Research Center

**Local Host**

Emilio Cuevas-Agulló  
Izana Atmospheric Research Center

# Scientific Program

SUNDAY, MARCH 18

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5:00 p.m.– 6:45 p.m.      **Ice Breaker Reception**  
Grand Teide Ballroom

MONDAY, MARCH 19

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8:30 a.m.– 9:00 a.m.      **Introductions and Welcome**  
Presiding: Terry Deshler  
Convener: Emilio Cuevas-Agullo  
Location: Salon Vilaflor

9:00 a.m.– 10:30 a.m.      **Stratospheric Aerosol Record**  
Presiding: Markus Hermann  
Convener: Jean-Paul Vernier  
Salon Vilaflor

9:00 a.m. –9:30 a.m.      **Christian von Savigny | *Comparison of stratospheric aerosol measurements in the post-Pinatubo era from different satellite platforms (Invited)***

9:30 a.m. –9:45 a.m.      **Ghassan Taha | Validation of OMPS Limb Profiler Stratospheric Aerosol Measurements**

9:45 a.m. –10:00 a.m.      **Katie Foster | In-Situ Stratospheric Size Distribution Measurements from 2006 – 2015: comparisons with OSIRIS and OMPS extinction products**

10:00 a.m. –10:15 a.m.      **Landon A Rieger | Extending the stratospheric aerosol record with OMPS-LP measurements**

10:15 a.m. –10:30 a.m.      **Christine Bingen | Stratospheric aerosol data records for the ESA Climate Change Initiative (CCI) and beyond**

10:30 a.m.– 11:00 a.m.      **AM Break**

11:00 a.m.– 1:00 p.m.      **Aerosol in the Upper Troposphere Lower Stratosphere**  
Presiding: Markus Hermann

Convener: Jean-Paul Vernier

Salon Vilaflor

- 11:00 a.m. –11:15 a.m. **Markus Rex** | Initial results from the StratoClim aircraft campaign in the Asian Monsoon in summer 2017
- 11:15 a.m. –11:30 a.m. **Suvarna Fadnavis** | Asian Tropopause Aerosol Layer (ATAL) during El Niño: Impact on the Indian summer monsoon
- 11:30 a.m. –11:45 a.m. **Markus Hermann** | Influence of Stratospheric-Tropospheric Exchange on Aerosol Particle Concentrations in the UT/LMS - a Statistical Analysis of Aircraft Data from the IAGOS-CARIBIC Observatory
- 11:45 p.m. –12:00 p.m. **Mian Chin** | Natural and Anthropogenic Aerosols in the UTLS in Recent Decade: Sources and the Role of Monsoon Transport
- 12:00 p.m. –12:30 p.m. **Nickolay Anatoly Krotkov** | *Satellite retrievals of volcanic and anthropogenic SO<sub>2</sub> emissions (Invited)*
- 12:30 p.m. –12:45 p.m. Review of the schedule for afternoon formal/informal group discussions
- 1:00 p.m.– 6:00 p.m. **Lunch and formal/informal group discussions**
- 2:00 p.m. - 4:00 p.m. **Early Career Researchers** - Salon Vilaflor
- 7:00 p.m.– 8:00 p.m. **Keynote: Stephan Borrmann - The Tropical Upper Troposphere and Lower Stratosphere: Source Region for Stratospheric Aerosols**  
Presiding: Markus Hermann  
Convener: Jean-Paul Vernier  
Salon Vilaflor
- 8:00 p.m.– 10:00 p.m. **Chapman Conference Posters – Satellite and Other Measurements**  
Presiding: Terry Deshler  
Conveners: Larry Thomason and Mian Chin  
Iriarte
- P-1 **Elizaveta Malinina** | Aerosol particle size distribution parameters and extinction coefficients from SCIAMACHY Limb measurements
- P-2 **Johan Friberg** | Aircraft and satellite-based studies of stratospheric aerosol – composition, sources and climate forcing
- P-3 **Elisa Carboni** | Retrievals of sulfur species from IASI measurements

- P-4 **Jean-Paul Vernier** | A decade of stratospheric aerosol observations by the CALIPSO space-borne lidar
- P-5 **Terry Deshler** | The stratospheric sulfur burden: an assessment based on gas and particle phase measurements
- P-6 **Kevin R Leavor** | Early Observations of Aerosols from the SAGE III ISS Instrument
- P-7 **Mahesh Kovilakam** | Revisiting Stratospheric aerosol climatology for the post-SAGEII era using space-based measurements
- P-8 **Michael D Fromm** | Sulfates From the Get-Go in Stratospheric Volcanic Eruptions Big and Small
- P-9 **Michael D Fromm** | Stratospheric Smoke to Rival Sulfate: the pyroCb Plume of 2017
- P-10 **John Edward Barnes** | Constraining aerosol properties with ground-based lidar and other remote sensing techniques
- P-11 **Stefanie Kremser** | New carbonyl sulfide measurements in the Southern Ocean
- P-12 **Catherine Wilka** | Sensitivity of Heterogeneous Chlorine Chemistry on Sulfate Aerosols in the Tropical Stratosphere

TUESDAY, MARCH 20

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- 9:00 a.m.– 10:30 a.m. **Stratospheric Aerosol from Non-Sulfate Sources**  
Presiding: Christine Bingen  
Conveners: Marc von Hobe  
Salon Vilaflor
- 9:00 a.m. –9:30 a.m. **Ralf Weigel** | *Presence and potential impacts of meteoritic aerosol material in the stratosphere (Invited)*
- 9:30 a.m. –9:45 a.m. **Sergey Khaykin** | Non-Volcanic Contributors To Stratospheric Aerosol Load At Northern Midlatitudes: A Multi-Platform Perspective On Asian Pollution And Forest Fires
- 9:45 a.m. –10:00 a.m. **Omar Torres** | Stratospheric Injection of Massive Smoke Plume from Canadian Boreal Fires in 2017 as seen by DSCOVR-EPIC and OMPS-LP Observations

- 10:00 a.m. –10:15 a.m. **Margaret A Tolbert** | Ash, Sulfate and Ice: Examining Interactions One Particle at a Time
- 10:15 a.m. –10:30 a.m. **Graham W Mann** | The presence of and effects from meteoric-sulphuric particles within the stratospheric aerosol layer
- 10:30 a.m. – 11:00 a.m. **AM Break**
- 11:00 a.m.– 12:30 p.m. **Stratospheric Sulfur Burden**  
 Presiding: Christine Bingen  
 Conveners: Marc von Hobe  
 Salon Vilaflor
- 11:00 a.m. –11:30 a.m. **Michael Hoepfner** | *Measurements of Gas Phase Stratospheric Sulfur (Invited)*
- 11:30 a.m. –11:45 a.m. **Simon A Carn** | Volcanic SO<sub>2</sub> emissions in the post-Pinatubo era - how quiescent is quiescent?
- 11:45 a.m. –12:00 p.m. **Kirstin Krüger** | DMS Transport from the West Indian Ocean to the Stratosphere during Asian Monsoon 2000-2016
- 12:00 p.m. –12:15 p.m. **Sinikka T. Lennartz** | How well do we understand marine emissions of carbonyl sulfide?
- 12:15 p.m. –12:30 p.m. **Zak Kipling** | Assimilated Volcanic SO<sub>2</sub> as a Source of Sulfate Aerosol Transported to the Stratosphere
- 12:30 p.m.– 6:00 p.m. **Lunch and formal/informal group discussions**
- 2:00 p.m. – 3:00 p.m. **Future of SSiRC** - Salon Vilaflor
- 7:00 p.m.– 8:00 p.m. **Keynote: Marc von Hobe - Do we understand the sources of stratospheric sulfur?**  
 Presiding: Christine Bingen  
 Conveners: Marc von Hobe  
 Salon Vilaflor
- 8:00 p.m.– 10:00 p.m. **Chapman Conference Posters – Other Measurements (con't) and UTLS**  
 Presiding: Terry Deshler  
 Conveners: Larry Thomason and Mian Chin  
 Iriarte

- P-13 **Terry Deshler** | Retrieval of aerosol size distributions from in situ particle counter measurements accounting for instrument counting efficiency, and comparisons with satellite measurements of extinction and estimates of aerosol surface area.
- P-14 **Marcellinus Snels** | Lidar measurement of thin cirrus and aerosol at Palau Island (7°N 134°E)
- P-15 **Marcellinus Snels** | Statistical study of polar stratospheric clouds observations by ground- and satellite based lidars and relevance for chemistry climate models
- P-16 **Michael C Pitts** | Polar Stratospheric Cloud and Aerosol Climatology Based on CALIOP Measurements From 2006-2017
- P-17 **Amit K Pandit** | Impact of Increased Aerosol Load on Mid-latitude Cirrus Clouds
- P-18 **Paul Lawson** | **Large (1-10 Micron)** Particles Observed In Situ in the Tropical Western Pacific Lower Stratosphere During the ATTREX Campaign
- P-19 **Thomas Duncan Fairlie** | Characterizing the Asian Tropopause Aerosol Layer using in situ balloon measurements, satellite observations and a chemical transport model
- P-20 **Hazel Vernier** | Chemical Composition of the Asian Tropopause Aerosol Layer
- P-21 **Christoph Bruehl** | Model simulated and satellite observed aerosols in the UTLS with a focus on non-sulfate particles
- P-22 **Beiping Luo** | How do stratospheric sulfate and meteoritic aerosols affect cirrus clouds and PSCs and their dehydration potential?
- P-23 **Igor Appel** | Influence of processes in stratosphere upon the temperature at the tropopause and below

WEDNESDAY, MARCH 21

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8:30 a.m.– 7:30 p.m.

**Field trip to Teide National Park and Izana Observatory**

Presiding: Terry Deshler

Conveners: Emilio Cuevas-Agullo

- 9:00 a.m.– 10:30 a.m.      **Stratospheric Aerosol Climatologies**  
Presiding: Alan Robock  
Conveners: Larry Thomason  
Salon Vilaflor
- 9:00 a.m. –9:30 a.m.      **Thomas Peter** | *The Basis and Development of the CMIP6 Stratospheric Aerosol Record (Invited)*
- 9:30 a.m. –9:45 a.m.      **Larry Willis Thomason** | Inferring aerosol properties from space-based measurements: An alternative to direct retrieval
- 9:45 a.m. –10:00 a.m.      **Sabine Griessbach** | Measuring and Simulating Particulate Matter in the Upper Troposphere and Lower Stratosphere (UTLS)
- 10:00 a.m. –10:15 a.m.      **Laura E. Revell** | Impacts of Mt. Pinatubo volcanic aerosol on the tropical stratosphere in chemistry-climate model simulations using CCM1 and CMIP6 stratospheric aerosol data.
- 10:15 a.m. –10:30 a.m.      **Pawan K Bhartia** | Improving the Performance of the OMPS Limb Profiling Instrument in Monitoring Aerosols in the Post-Pinatubo Stratosphere
- 10:30 a.m.– 11:00 a.m.      **AM Break**
- 11:00 a.m.– 12:30 p.m.      **Stratospheric Aerosol and Climate - Forcing**  
Presiding: Alan Robock  
Conveners: Larry Thomason  
Salon Vilaflor
- 11:00 a.m. –11:30 a.m.      **Mike Mills** | *Global volcanic aerosol properties and volcanic forcing of global climate change since 1990 (Invited)*
- 11:30 a.m. –11:45 a.m.      **Jennifer Schallock** | Model simulations of stratospheric aerosols from volcanic eruptions and their radiative forcing
- 11:45 a.m. –12:00 p.m.      **Sergey Osipov** | The effects of SO<sub>2</sub>, volcanic ash and sulfate aerosols on photolysis rates and the sulfate chemical production following the volcanic eruptions
- 12:00 p.m. –12:15 p.m.      **Lauren Marshall** | Investigating the Radiative Forcing from Volcanic Eruptions Using Statistical Emulation

- 12:15 p.m. – 12:30 p.m. **Valentina Aquila** | Changes in Upper Troposphere/Lower Stratosphere Aerosol Since 1980 in the Goddard Earth Observing System (GEOS-5) Model
- 12:30 p.m. – 6:00 p.m. **Lunch and formal/informal group discussions**
- 2:00 p.m. – 4:00 p.m. **Volcanic response plan**  
Salon Vilaflor
- 6:00 p.m. – 7:00 p.m. **Conference Banquet - Tenerife**
- 7:00 p.m. – 8:00 p.m. **Keynote: Matthias Dörries** | - **Stratospheric science and the Cold War**  
Presiding: Alan Robock  
Conveners: Larry Thomason  
Salon Vilaflor
- 8:00 p.m. – 10:00 p.m. **Chapman Conference Posters – Models and Future Measurements**  
Presiding: Terry Deshler  
Conveners: Larry Thomason and Mian Chin  
Iriarte
- P-24 **Daniele Vioni** | Stratospheric sulfate aerosol microphysics in QBO regimes under different scenarios of sulfate geoengineering
- P-25 **Daniele Vioni** | Stratospheric aerosols from major volcanic eruptions: QBO impact on the aerosol cloud dispersal and optical depth
- P-26 **Ulrike Niemeier** | Impact of the QBO phases on transport of sulfate aerosols in the stratosphere
- P-27 **Timofei Sukhodolov** | Size-Resolved Stratospheric Aerosol Distributions after Pinatubo Derived from a Coupled Aerosol-Chemistry-Climate Model
- P-28 **Georgiy Stenchikov** | Calculating the Self-Consistent Vertical Structure of a Multicomponent Stratospheric Volcanic Plume in a Fine-Resolution Regional Model
- P-29 **Thomas Jacques Aubry** | Recent improvements of 1D models of volcanic plume rise: Implications for characterizing sulfur emissions by explosive volcanic eruptions and the subsequent sulfate aerosol forcing.
- P-30 **Ralph Lehmann** | Model calculations of the contribution of tropospheric SO<sub>2</sub> to the stratospheric aerosol layer



- P-31 **Sarah Shallcross** | Global dispersion and microphysical variation of the 1991 Mount Pinatubo plume: A ground-based lidar and interactive modelling analysis.
- P-32 **Claudia Timmreck** | The Interactive Stratospheric Aerosol Model Intercomparison Project (ISA-MIP)
- P-33 **James Douglas Goetz** | Stratéole 2: Long Duration Measurements of Aerosol Profiles in the TTL using the Reel-down Aerosol, Clouds, Humidity, and Temperature Sensor (RACHuTS) and LASP Optical Particle Counter (LOPC)
- P-34 **Kirstin Krüger** | Are We Ready for the Next Big Sulfur- and Halogen-rich Eruption in the Tropics?
- P-35 **Matthew D. Brown** | Advancing High-Altitude Observation through the Development of an Upper Tropospheric, Lower Stratospheric Aerosol Measurement Package (UTLS-AMP)
- P-36 **Alan Robock** | Balloon observatories needed for future volcanic eruption observations
- P-37 **Juan-Carlos Antuna-Marrero** | One step further in the objectives of LALINET: preparation for the next major volcanic eruption and validations of the UTLS aerosols measurements from EarthCare and Sage III satellite missions.

FRIDAY, MARCH 23

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- 9:00 a.m.– 10:30 a.m. **Stratospheric Aerosol and Climate – Climate Response**  
 Presiding: Mian Chin  
 Conveners: Claudia Timmreck and Stefanie Kremser  
 Salon Vilaflor
- 9:00 a.m. –9:30 a.m. **Benjamin D Santer** | *Identifying the Climate Signals of Early 21st Century Volcanic Eruptions (Invited)*
- 9:30 a.m. –9:45 a.m. **Evgeniya Predybaylo** | Testing the stratospheric radiative heating and surface cooling caused by volcanic aerosols in models with prescribed and interactive volcanic plumes
- 9:45 a.m. –10:00 a.m. **Susanne Bauer** | Interactive historical volcanic emissions, effects on chemistry and climate

10:00 a.m. –10:15 a.m.	<b>Mohamadou Diallo</b>   Significant contributions of volcanic aerosols to decadal changes in the stratospheric circulation
10:15 a.m. –10:30 a.m.	<b>Brian Zambri</b>   Volcanic Eruptions as the Cause of the Little Ice Age
10:30 a.m. – 11:00 a.m.	<b>AM Break</b>
	<b>Stratospheric Aerosol and the Future Climate</b>
11:00 a.m.– 12:30 p.m.	Presiding: Mian Chin Conveners: Stefanie Kremser and Claudia Timmreck Salon Vilaflor
11:00 a.m. –11:30 a.m.	<b>Owen Brian Toon</b>   <i>The Impact of Future Climate Changes on Stratospheric Aerosols (Invited)</i>
11:30 a.m. –11:45 a.m.	<b>Thomas Jacques Aubry</b>   Eruption plume height and its impact on volcanic forcing: towards more realistic forcing reconstructions and scenarios for future climate projections
11:45 a.m. –12:00 p.m.	<b>Claudia Timmreck</b>   Climate impact of a hypothetical Mt. Agung like eruption in boreal autumn 2017
12:00 p.m. –12:15 p.m.	<b>Lars Kalnajs</b>   In Situ Measurements Of Stratospheric Aerosol Size Distributions During The Post Pinatubo Period And In Preparation For The Next Major Volcanic Eruption.
12:15 p.m. –12:30 p.m.	<b>Joshua Kennedy</b>   Ice Core Evidence of Recent Volcanic Contribution to Stratospheric Aerosols
12:30 p.m. – 1:30 p.m.	<b>Lunch</b>
1:30 p.m.– 2:30 p.m.	<b>Keynote: Michael Sigl</b> - Shedding Light on Earth's Volcanic Past Using Arrays of Ice Cores: How Common is Present-Day Volcanic Activity in a Multi-Millennial Context? Presiding: Mian Chin Convener(s): Claudia Timmreck, Stefanie Kremser Salon Vilaflor
2:30 p.m. – 3:00 p.m.	<b>PM Break</b>
3:00 p.m.– 5:00 p.m.	<b>Reports from rapporteurs/Discussion of outstanding scientific questions</b> Presiding: Terry Deshler

Conveners: Mian Chin and Larry Thomason

Salon Vilaflor

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