Fire Prediction Across Scales

Monday, October 23rd – Union Theological Seminary

8:00 AM Sign-in
8:30 AM Welcome and introduction

Fire Prediction and Operational Needs

9:00 AM Matt Butler – A fire manager's perspective on fire season potential based on climate, weather, and fire behavior predictions.
9:20 AM Ed Delgado – Challenges facing wildland fire forecasters
9:40 AM Haiganoush Preisler – Statistical predictions of fire occurrence and spread
10:00 AM George Milne – High performance wildfire prediction technology use in western Australia
10:20 AM Karin Riley – Fire prediction and uncertainty across temporal and spatial scales

Process-Based Fire Prediction

11:00 AM Mark Finney – Physical process in wildland fire spread at fine scales
11:20 AM Rod Linn – Using coupled wildfire/atmosphere models to further to expand our understanding of wildfire behavior
11:40 AM Ali Tohidi – Firebrand formation and transport, a critical mechanism of wildfire propagation
12:00 PM Nicholas Nauslar – Improving lightning and dry lightning guidance with calibrated probabilities from regional and convection allowing ensemble model output
12:20 PM Michael Gollner – Data-driven fire modeling
12:40PM Lunch

Seasonal Fire Prediction

2:00 PM Jim Randerson – Advances in global fire prediction on daily to decadal timescales
2:20 PM Yang Chen – Improving experimental fire season severity forecasts in the Amazon
2:40 PM Francesca Di Giuseppe – From weather to fire: from fire to weather
3:00 PM Andrew Robertson – Current developments in sub-seasonal to seasonal forecasting
3:20 PM Break

Fire prediction for Risk Assessment

3:40 PM David Caballero – Fire risk assessment across spatial scales in the WUI. Some examples of practical application in Europe
4:00 PM Ross Bradstock – A probabilistic model to predict property loss from fires at fine temporal and spatial scales
4:20 PM Adam Kochanski – An analysis of socio-economic impact of fire modeling and fire detection data
4:40 PM Break
4:50 PM Panel Discussion
5:20 PM Evening Poster reception
7:30 PM End of Day 1
Tuesday, October 24th – Davis Auditorium

Pyrogeography 1

9:00 AM David Bowman – The role of pyrogeographic synthesis in the attribution of climate change to ‘unprecedented’ fire regimes: the case of the 2016 Tasmanian wilderness fires

9:20 AM Katherine Glover – Vegetation and fire in the San Bernardino Mountains, southern California since 120,000 years BP: Insights and challenges for 21st century predictions

9:40 AM Jed Kaplan – Fire and land cover change during the Maori colonization of New Zealand: Hypothesis testing with model simulations and charcoal data

10:00 AM Rachel Loehman – Modeling ecological resilience and human-environment interactions in engineered landscapes of the prehistoric American Southwest

10:20 AM Jennifer Marlon – Understanding fire activity outside the range of modern environmental conditions

10:40 AM Break

Pyrogeography 2

11:00 AM Leroy Westerling – TBD: climate change and fire in the western US

11:20 AM Trent Penman – Non-linear changes to future fire in forests and grasslands

11:40 AM Karen Short – Modeling synchronous large-fire activity across the conterminous U.S

12:00 PM Nathan Mietkiewicz – Drivers of historic and future wildfire occurrence across the United States: the relative contribution of human ignitions vs climate to fire size and probability

12:20 PM Lunch

Human and Ecological Aspects of Fire Prediction 1

1:50 PM Winslow Hansen – A perfect storm: multiple stressors interact to drive postfire regeneration failure of lodgepole pine and Douglas-fir forests in Yellowstone

2:10 PM Jacquelyn Shuman – FATES-SPITFIRE: Fire within a size-structured vegetation model

2:30 PM Cristina Montiel-Molina – Fire scenarios in the Central Mountains Range (Spain): a multi-scale concept for integrated fire management in the context of global change

2:50 PM Ryan Bart – Development of a coupled model for investigating the effects of forest management and climate on wildfire regimes in the western U.S.

3:10 PM Break

Human and Ecological Aspects of Fire Prediction 2

3:30 PM Erin Hanan – Effects of fire suppression and climate change on wildfire activity in the Pacific Northwest

3:50 PM Ellie Graeden – Utilizing automated fire growth models to support private industry

4:10 PM Maria Uriarte – Rural development and fires in the Peruvian Amazon

4:30 PM Break

4:40 PM Panel Discussion

5:10 PM End of Day 2
## Wednesday, October 25th – Davis Auditorium

### Smoke

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>9:00 AM</td>
<td>Ruth DeFries</td>
<td>Human causes and consequences of fire</td>
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<tr>
<td>9:20 AM</td>
<td>Derek Mallia</td>
<td>Innovative approaches for modeling smoke impacts from prescribed burns and wildfires</td>
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<tr>
<td>9:40 AM</td>
<td>Charles Ichoku</td>
<td>Understanding present-day North American fires from satellite observations to enhance predictability</td>
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<tr>
<td>10:00 AM</td>
<td>Rebecca Buchholz</td>
<td>Predicting atmospheric carbon monoxide over fire regions using climate indices</td>
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<td>10:20 AM</td>
<td>Rizaldi Boer</td>
<td>Fire risk information system for managing land and forest fire in Indonesia</td>
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<td>10:40 AM</td>
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<td>Break</td>
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### Global fire modeling and Intercomparison 1

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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>11:00 AM</td>
<td>Stijn Hantson</td>
<td>The status of global fire modeling: Results from the Fire Model Intercomparison Project (FireMIP)</td>
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<tr>
<td>11:20 AM</td>
<td>Gitta Lasslop</td>
<td>The impact of fire on vegetation: model intercomparison of impacts in eight global process-based models and a statistical model</td>
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<td>11:40 AM</td>
<td>Keren Mezuman</td>
<td>PyrE, an interactive fire module within the NASA-GISS Earth System Model</td>
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<tr>
<td>12:00 PM</td>
<td>Yongqiang Liu</td>
<td>Improving climate prediction by parameterizing fire-induced land-surface changes in Earth System models</td>
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<tr>
<td>12:20 PM</td>
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<td>Lunch</td>
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### Global fire modeling and Intercomparison 2

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1:20 PM</td>
<td>Matt Jolly</td>
<td>Linking ecophysiology and vegetation dynamics to improve the wildland fire models</td>
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<tr>
<td>1:40 PM</td>
<td>Matthias Boer</td>
<td>A hydroclimatic model of global fire patterns</td>
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<td>2:00 PM</td>
<td>Dominique Bachelet</td>
<td>The challenges of modeling fire: climate and CO2 effects can be simulated but human behavior and decisions are unpredictable. FireMIP will help give directions toward progress</td>
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<td>Break</td>
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<td>2:30 PM</td>
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<td>Panel Discussion</td>
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<td>3:00 PM</td>
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<td>Closing Remarks</td>
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<td>Conference End</td>
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**Poster Presentations**  
Monday, October 23rd, Union Theological Seminary

1. **John Abatzoglou** - Global patterns of interannual fire-climate relationships
2. **Israr Albar** - Fire Prediction and Management in Sumatra, Indonesia during the 2015 El-Nino
3. **Muhammed Ali Imron** - PeatFire: An Agent-based model for peat fire prediction in a protected area of South Sumatra Indonesia under weather uncertainties
4. **Niels Andela** - Predicting human-driven changes in global fire activity
5. **Paulo Artaxo** - Increasing deforestation in Amazonia and its effects on the forest carbon dynamics
6. **Marcus V. Athaydes Liesenfeld** - Underground stem: A postfire resprouting advantage for palms in Amazon forest
7. **Akli Benali** - How can satellite data improve our knowledge on large wildfires?
8. **Akli Benali** - Evaluation of the Global Fire WEather Database (GFWED)
9. **Matthias Boer** - Early warning system for unseasonal forest flammability
10. **Jiajue Chai** - Tracking nitrogen oxides, nitrous acid, and nitric acid from biomass burning
12. **Melanie Follette-Cook** - Predictive Fire Emissions in the NASA GEOS-5 Earth System Model
15. **Erin Hanan** - Using remote sensing to account for disturbance history in process-based, carbon cycling models
16. **Hety Herawati** - Tools for Assessing the Impacts of Climate Variability and Change on Wildfire Regimes in Forests
17. **Joshua Heyer** - Exploring relationships between fire, climate, land-use, and vegetation in the southwestern Amazon near Noel Kempff Mercado National Park, Bolivia
18. **Maggie Hurwitz** - Goddard Applied Sciences: Bringing NASA Goddard’s Earth Science Data Products and Resources to End Users
19. **Piyush Jain** - The relationship between the polar jet stream and fire spread days in Alberta, Canada
20. **Kyu-Myong Kim** - Seasonal-to-interannual variation in biomass burning over the contiguous United States
21. **Zhihua Liu** - Global biophysical effects of forest fire differ by region
22. **Jan Mandel** - Coupled fire-atmosphere-fuel moisture online modeling system WRF-SFIRE
23. **Stéphane Mangeon** - Addressing the Fuel Consumption biases in Global Fire Models
24. **Nicholas McCarthy** - Predicting pyroconvection: a challenge for fire management as well as fire research
25. **Taylor McCorkle** - Communicating Fire Weather Risks at Short Lead Times using the High-Resolution Rapid Refresh Forecast Modeling System
26. **Douglas Morton** - Seasonal to sub-seasonal predictions of understory fire risk in Amazon forests

27. **Nicholas Nauslar** - An Impact-Based Decision Support Paradigm for National Weather Service Wildfire Forecast and Warning Services

28. **Jonathan Nichols** - Climate, Fire, and Vegetation Control on Peat Carbon Accumulation in Borneo

29. **Sandra Oliveira** - The social context of fire-affected areas. A first assessment regarding the extreme fire events in central Portugal (June 2017)

30. **Lesley Ott** - Chemical weather forecasting of smoke events: lessons on predictability from NASA’s GEOS modeling system

31. **Xiaohua Pan** - Investigation of Indonesian fires during 1979-2016: connection with the type of El Niño and phase of Indian Ocean Dipole

32. **Mark Parrington** - Estimating and predicting fire emissions for operational forecasts of global atmospheric composition in the Copernicus Atmosphere Monitoring Service

33. **Scott Rabenhorst** - Modeling Pyrocumulonimbus Blowups and Cloud-Aerosol Interactions

34. **Simin Rahmani** - Predicting the pollution level from smoke plumes

35. **Steve Taylor** - Wildfire Management Decision Making – Fast and Slow: A systems framework for wildfire management research

36. **Steve Taylor** - Predicting Severe Wildfire Occurrence in Canada

37. **Fengjun Zhao** - Shift of fire season from spring to summer in northeastern China under global warming