

## **USFS – NASA Virtual Pitch Fest / June 2, 2020**

Tree Structure Damage Impact Predictive  
(TreeS-DIP) Model/Product

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30 years working with remote sensing data, MS from the University of Michigan in Remote Sensing

20 years of service with the US Forest Service



Application of remote sensing services, products, data and training to address Forest and Districts Needs



Dr. Andrew Molthan - National Aeronautics & Space Administration (NASA)

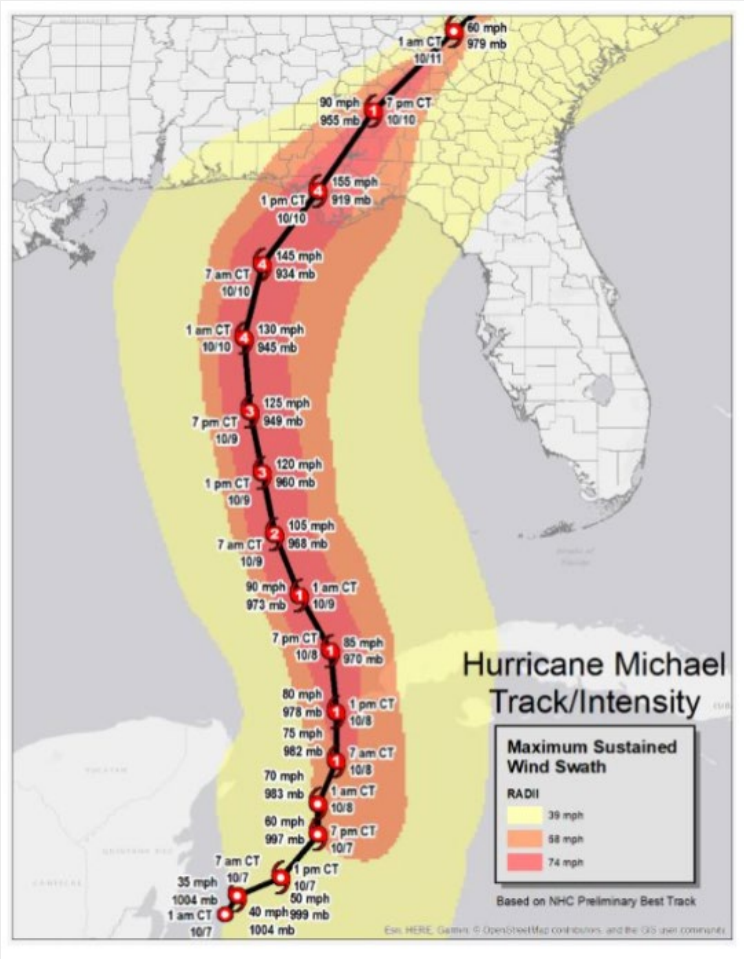
Dr. Christopher Hain - NASA Short-term Prediction Research and Transition Center

Brad Quayle - Geospatial Technology Application Center (GTAC)

Bonnie Stine – State of Florida and Southern Group of State Foresters

Bill Burkman - Forest Inventory & Analysis (FIA)/Southern Research Station (SRS)

# Tree Structure Damage Impact Predictive (TreeS-DIP) Model/Product



- Where is the impact and how intense (bad) is it?
- Prototype is focused on USFS Southern Region
- Application could be applied to local or national response





# Tree Structure Damage Impact Predictive (TreeS-DIP) Model/Product

- Explore a coarse resolution model (1 to 3Km) for strategic assessment/planning.
- Would assist in focusing field reconnaissance efforts.
- Design a procedure where model inputs (satellite observation data, Wx forecast/observation data, etc.) can be ingested into a damage impact model.
- Distribute (online) modeled relative and classified damage impact product(s) to share with the Forest Service and its partners after large scale events.





# Issue(s) being addressed

- Strategic planning results to deploy field response assets.
- Reliable data on forest damage informs:
  - Timber salvage planning
  - Fuels management/wildfire risk
  - Forest restoration planning
  - Wildlife habitat
  - Local economic impact assessment



Issues Addressed

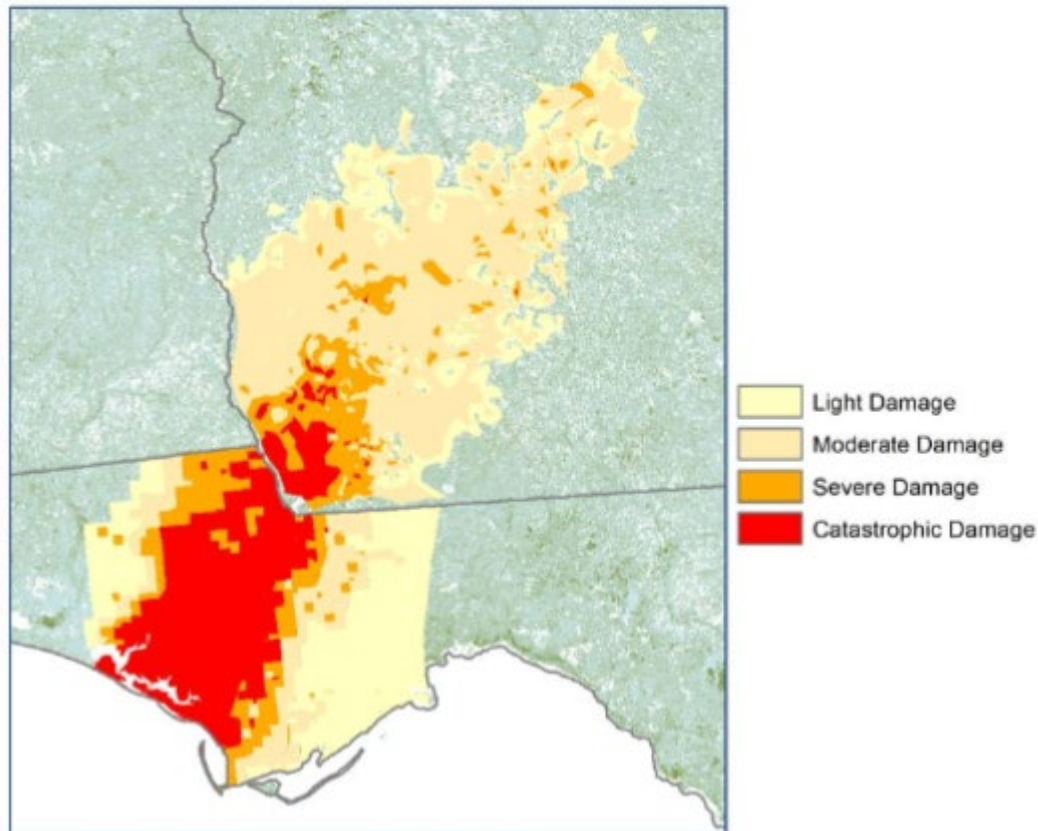
## Data is required from NOAA and NASA

- Wind or Cumulative **Wind Velocity** –Raw RADAR data provided by NOAA, possible model by FIA
- Land Information System (LIS) **Soil Moisture** from NASA's SPoRT Center The NASA Short-term Prediction Research and Transition (SPoRT) Center runs a real-time version of the Noah land surface model at ~3-km resolution over the Continental U.S.
- Cumulative Precipitation – Available NASA, NOAA and FIA and hosted by NASA  
The Global Precipitation Measurement (GPM) mission is an international network of satellites that provide the next-generation global observations of rain and snow. Other rainfall information is available via NOAA's weather radar network and can be obtained in collaboration with NASA partners.
- Duration of wind direction data or models (Uncertain and may not be necessary)
- Flood data from NASA and other sources (synthetic aperture radar and optical remote sensing) –  
Products have been generated from past events by MSFC and SPoRT team members in collaboration with the Alaska Satellite Facility. Products can be offered on an event-specific basis and/or collaborative training provided to USFS staff to assist with building capacity for internal analysis.
- Identifying and testing any existing relevant models from FIA and NASA.
- Optical and SAR remote sensing products that may be available on an event-specific basis including:
  - NASA's Disasters Program products



# Early predication of the distribute & intensity of Tree Structure Impact The Idea – Outcomes / Societal Benefits

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- Increases staff safety!
- Increases efficiency.
- A common operating procedure to efficiently respond to large events.
- Strategic information to target allocation of resources to the field immediately following large events
- Timely information to inform congressional disaster response appropriations.





Thank You!

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