Project Title and Brief Abstract

An Integrated Forest and Fire Monitoring and Forecasting System for Improved Forest Management in the Tropics

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Partners: Forrest Melton (NASA Ames), Douglas Morton (NASA Goddard), Chris Potter (NASA Ames), Philip Frost (CSIR), Susan Minnemeyer (WRI's Global Forest Watch)

Private sector partners: Esri, Logi Analytics

Project Summary: CI's Firecast system sends near real-time alerts of fires, risk of fires, and deforestation and engages international users to facilitate the use of near real-time monitoring systems to achieve conservation success

Earth Observations applied: MODIS active fire, MODIS atmospheres (MOD07), TRMM, GPM IMERG, QUICC 250-m, VIIRS active fire

Firecast

PI: Karyn Tabor, Conservation International (ktabor@conservation.org, 703-341-2560)

Purpose and Objective

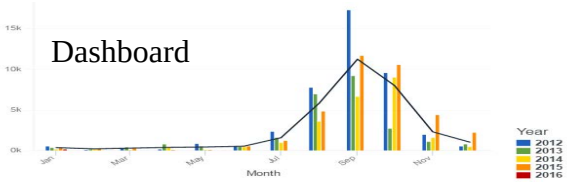
Firecast is a tool designed to empower local stakeholders with timely fire monitoring and forecasting information for improved management of critical natural ecosystems.

Societal Benefit Area(s): Biodiversity, Climate, Disasters, Ecosystems

Geographic Focus: Bolivia, Colombia, Peru, Madagascar, and Indonesia

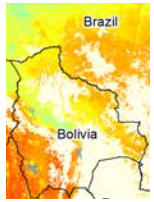
Target end users: governments, communities, and conservation organizations

Web map viewer



Mobile app

Daily fire risk



Fire season severity forecast

Firecast detects "deforestation in-action," disseminating daily alerts of fire activity observed by NASA satellites through email alerts, interactive web maps, mobile app, customized data visualizations and automated reports.

Approach

- Capacity building and engagement
  Risk: it's risky not to engage
- New NRT Earth observation products
  Risk: not communicating with users about new products
- Customized system functionality
  Risk: can't please everyone
- Expansion to new geographies and sectors
  Risk: long term sustainability of resources

Key Milestones

Release of mobile data collection application in Peru and Madagascar	09/15
Release of interactive dashboards to view fire trends and generate customized reports	12/15
Add new NRT products added (VIIRS and QUICC)	03/16
Add expanded and enhanced fire risk model to Firecast through partnership with Global Forest Watch	04/16
Outreach, engagement, capacity building workshops aimed in increase user base (1000+ subscribers) and integrate with CI's investments and REDD+ projects for improved monitoring.	08/17

ARL_{Start} = 3 **$ARL_{Most\ Recent}$ = 6** **ARL_{Goal} = 9**

Biggest Achievement or Advancement to Date

Madagascar Launch Workshop

August 18th-19th, 2015

- Thirty participants representing government and NGOs
- Received training on Firecast and NRT tools
- Revealed the newly launched VIIRS active fire (AFIS)
- Gathered feedback to make Firecast even more useful in their work

Why is this our biggest success?

- **Collaboration**
- **Capacity building**
- **Engagement**

Greatest Challenge:
communicating our niche

- Increasing institutional awareness
- Highlighting Firecast's niche in an arena with multiple players

How to overcome this?

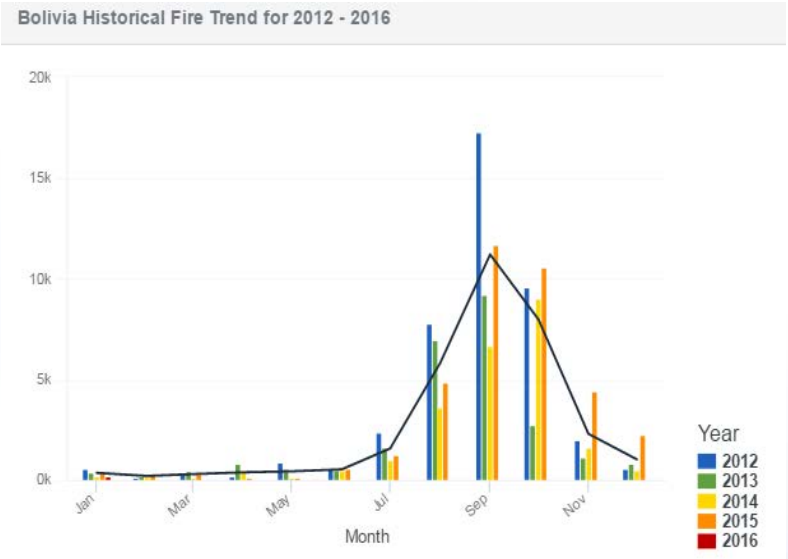
- Staying true to our edge, in-country presence and catering to specific needs
- Remembering multiple systems will meet multiple needs
- Ongoing engagement with stakeholders
- Forging collaborations

Firecast
Karyn Tabor, Conservation International

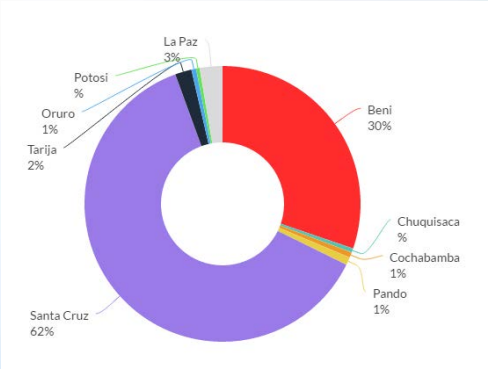
2/26/16

Logi Analytics + Autoridad de fiscalización y control social de Bosque y Tierra, Bolivia

- Private sector partnership with Logi
- Bolivian Forestry Department
  - Improve management of UOBTs (forestry sectors)
- Dashboards and automated reporting of fire trends
  - Enforcement
  - Awareness



Current fire detections compared with monthly totals for the past 5 years. The black line indicates the 5-year average for monthly fire detections.



"The ease of dragging and dropping graphs and figures into a standard dashboard or report will be a huge time saver for them (technicians at ABT)," - Juan Carlos Ledezma, Conservation International Bolivia.

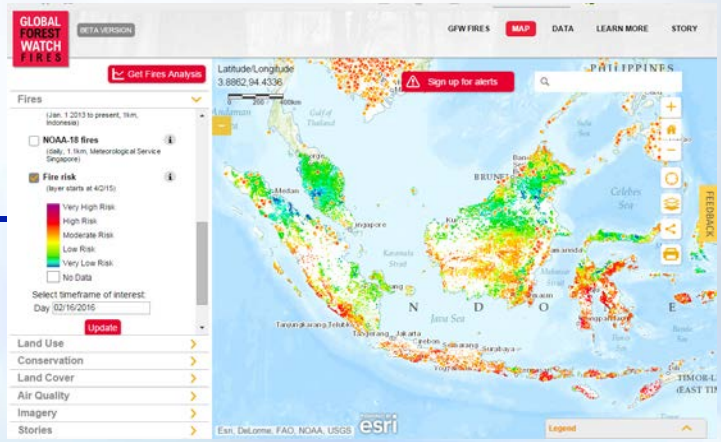
PI Overall Assessment

Summary of Challenges; Problems; Objective Analysis

- Leveraging social media
  - *Hire a millennial*
- System performance
  - *Looking for technology partners for in-kind cloud computing resources*
- QUICC 250-m generation and field data collection not synced
  - *Focus on app for alerts and patrolling*
- No time for research or publishing
  - *Fundraise research projects that connect with Firecast*

Summary of Positive Progress

- Fire risk model expanded in Global Forest Watch
- Private sector partnerships
- Outreach and engagement activities
- Exposure at other USG programs (SilvaCarbon-GFOI workshop hosted by INPE)
- Added VIIRS fires and QUICC data
- High-profile exposure (IUCN Congress, World Park's Congress, CI's Board)
- Collaborations (AFIS, GFW)



Overall Assessment

We are on time and have achieved even more than expected because of collaborations and partnerships.

PI Assessment of Future Project Progress

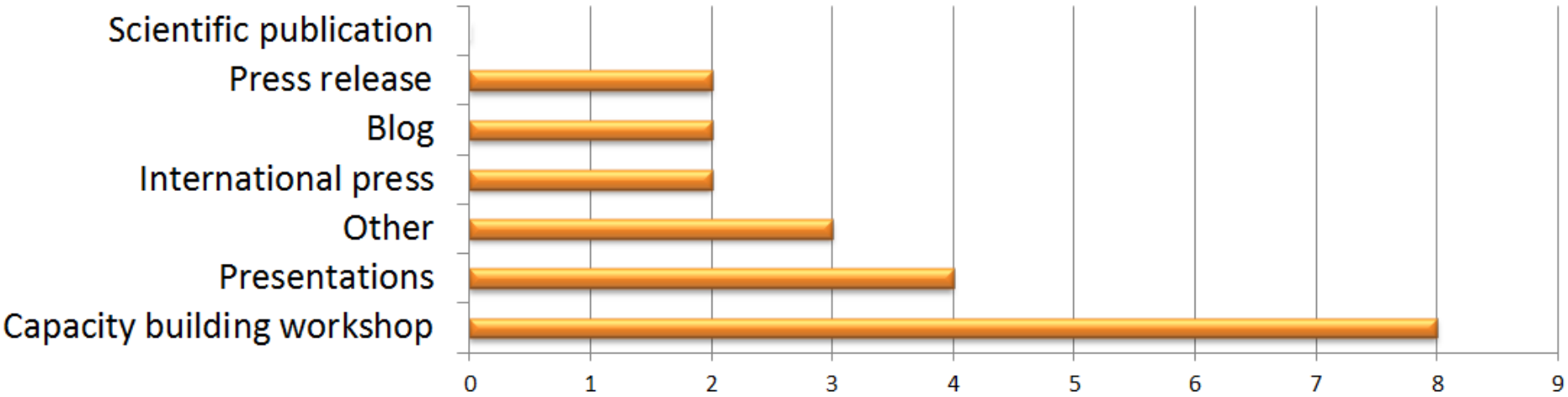
- Outreach engagement in Colombia (IDEAM (Institute of Hydrology, Meteorology and Environmental Studies)
- Indonesia outreach, including alignment with Sustainable Landscape Partnership
- Survey of Firecast use cases and feedback
- Explore new data or models relevant to users and private sector partners (Starbucks, Nestle)
- Develop key new tool functionality to enable systematic impact evaluations (Global Conservation Facility)
- In-situ sensors linked to alerts for priority areas (REDD+ and Tropical Ecology Assessment and Monitoring)
- Improved dashboards and reporting

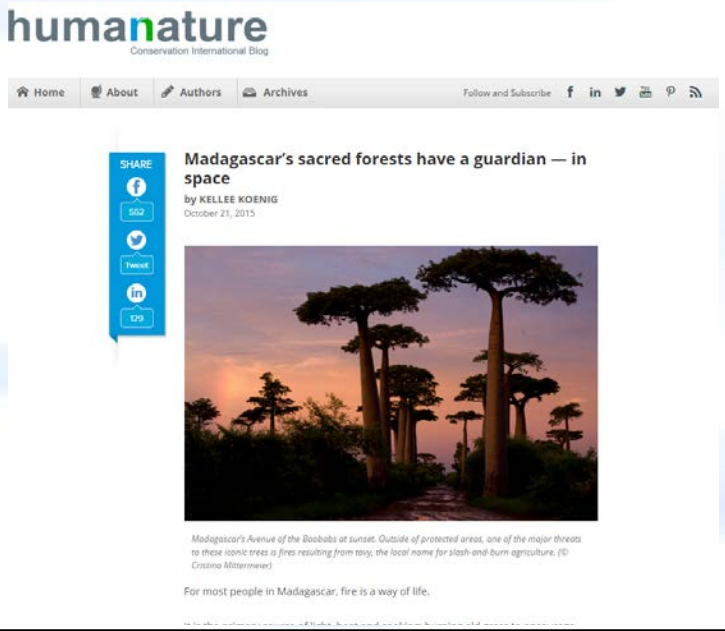
How can NASA and partners help?

- Private sector partnerships
  - Microsoft and Google for cloud computing and data hosting
- Research collaborations for new monitoring forecasting models
  - Near-term forecasting precipitation extremes for coffee rust outbreaks
  - Water scarcity forecasting
  - Land degredation
  - Ecosystem Health (natural capital accounting)
  - Likelihood of deforestation based on NRT drivers

ARL_{Start} = 3 **$ARL_{Most\ Recent}$ = 7** **ARL_{Goal} = 9**

Relevant Publications, Awards, Accomplishments





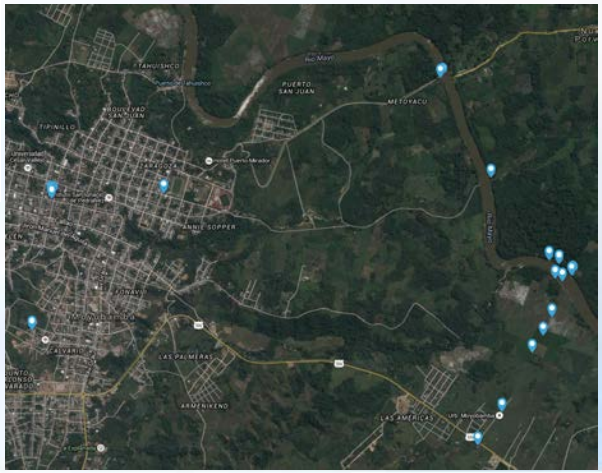
Peru regional Firecast workshop in the Ucayali Region May 27th, 2015.

Deserving Team Member

Eddy Mendoza CI-Peru

(above) Logging photos and observation in the field for the Firecast app. San Martine, Peru

August 2014, National workshop
April 2015 - 2 Regional workshops
May 2015 - 1 Regional workshop
September 2015 - 1 mobile app training



Firecast OnSight dashboard showing locations of logged field observations during the field exercise.

Creatively Define the Status of your Project

We have finished the sprint and just embarked on the marathon