Spring 2016 GSFC

Indonesia Agriculture

“Calamity in Kalimantan”

Scene 1 - Introduction

>> KYLE: Hello, I'm Kyle Peterson

>> MICHAEL: I'm Michael Riedman

>> ABIGAIL: And I'm Abigail Childs and we are the DEVELOP Indonesia Agriculture Team at the Goddard Space Flight Center.

>> KYLE: In collaboration with the World Wildlife Fund, we created a decision support system that will help to identify the location of palm oil plantations.

>> MICHAEL: Additionally, we have created a model that predicts the future risk of palm oil expansion in Central Kalimantan, Indonesia

Scene 2 - Study Area

[background music begins]

>> ABIGAIL: Central Kalimantan province, Indonesia, is located in Southeast Asia on the Island of Borneo. The government of Indonesia has established the goal of becoming the world's largest palm oil producer by 2020. ABIGAIL: The country plans to achieve this goal by converting 2 million HA of land into palm oil plantations.

>> MICHAEL: The rapid expansion of the palm oil industry and the creation of palm oil plantations is decimating the bio diverse rainforests of Kalimantan.

Scene 3 - Environmental Concerns

>> MICHAEL: The most cost effective way of converting land into palm oil plantations is to burn the existing forests and peat lands.

>> KYLE: This deforestation and burning has been recognized as one of the leading drivers of CO2 emissions, greatly impacting the carbon cycle.

>> MICHAEL: The forests of Central Kalimantan, are home to endangered orangutans and elephants. Palm oil has become an integral ingredient in everyday every day in everyday consumer products, from ramen noodles to Girl Scout cookies, from toothpaste to cosmetics

>> ABIGAIL: Palm oil is a leading driver of deforestation in Indonesia. In Central Kalimantan, palm oil plantations have steadily increased by 120,000 to 140,000 hectares per year since 2000.

SCENE 4 - Methodology

>> ABIGAIL: In order to create our decision support system, we utilized a combination of NASA Earth observations and ancillary data. NASA Earth observations utilized were: Relative humidity, maximum and minimum average temperature, precipitation, EVI (enhanced vegetation index), NDVI (normalized difference vegetation index), elevation, and slope

>> KYLE: Ancillary data included were: protected areas, pre-existing plantations, population, peat lands, soil type, and palm oil concessions

>> MICHAEL: After processing the data, the data were loaded into the MaxEnt modeling software to identify areas of potential palm oil plantations within Central Kalimantan, Indonesia, that were  based on sample points created from existing palm oil plantation locations. These results were then overlaid with conservation areas and other important factors to determine the risk of palm oil expansion on a regency-by-regency basis.

SCENE 5 - Results

>>MICHAEL: Our results indicated that there is a moderate to very high probability of 4.8 million hectares of palm oil plantations in Central Kalimantan Indonesia. The model predicted that the majority of these plantations would occur in the southwestern portion of the region.

>>MICHAEL: Using the results generated from our probability model, we created a risk of a map that illustrates areas most at risk of conversion. These results indicated that there are approximately 1 million hectares of land at moderate to very high risk.

>>KYLE: Our results indicated that Kotawaringin Timur, Kotawaringin Barat, and Sukamara were the regencies most at risk from future palm oil expansion.

SCENE 6 - Closing

>> KYLE: These results can be utilized by the WWF and its partners to reduce the impact of palm oil agriculture on natural resources and support the initiative to create a 100% deforestation free palm oil supply chain.

>> ABIGAIL: Innovative Risk maps will be a valuable asset to land use development and conservation planning entities in Indonesia that aim to improve agricultural production while decreasing its impact on natural forests

SCENE 7- Credits