# Forest Fire and REDD+

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Climate disruption is approaching a point of no return.


***António Guterres***
***Secretary-General***

**International Mother Earth Day, 22 April 2020**

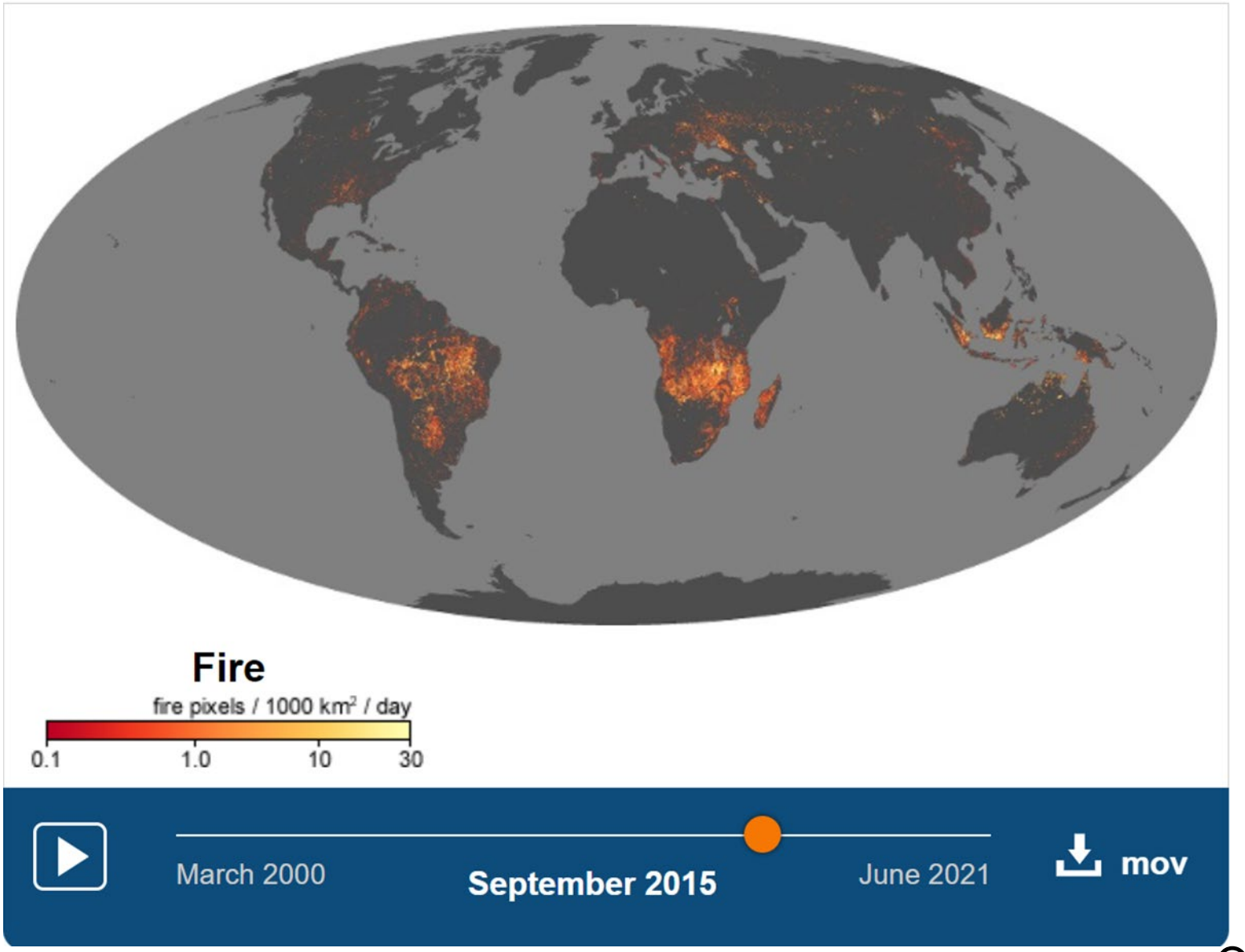
# Eye of 10th Typhoon in 2020 from International Space Station


Climate change is causing an increase in extreme events and a variety of natural disasters.

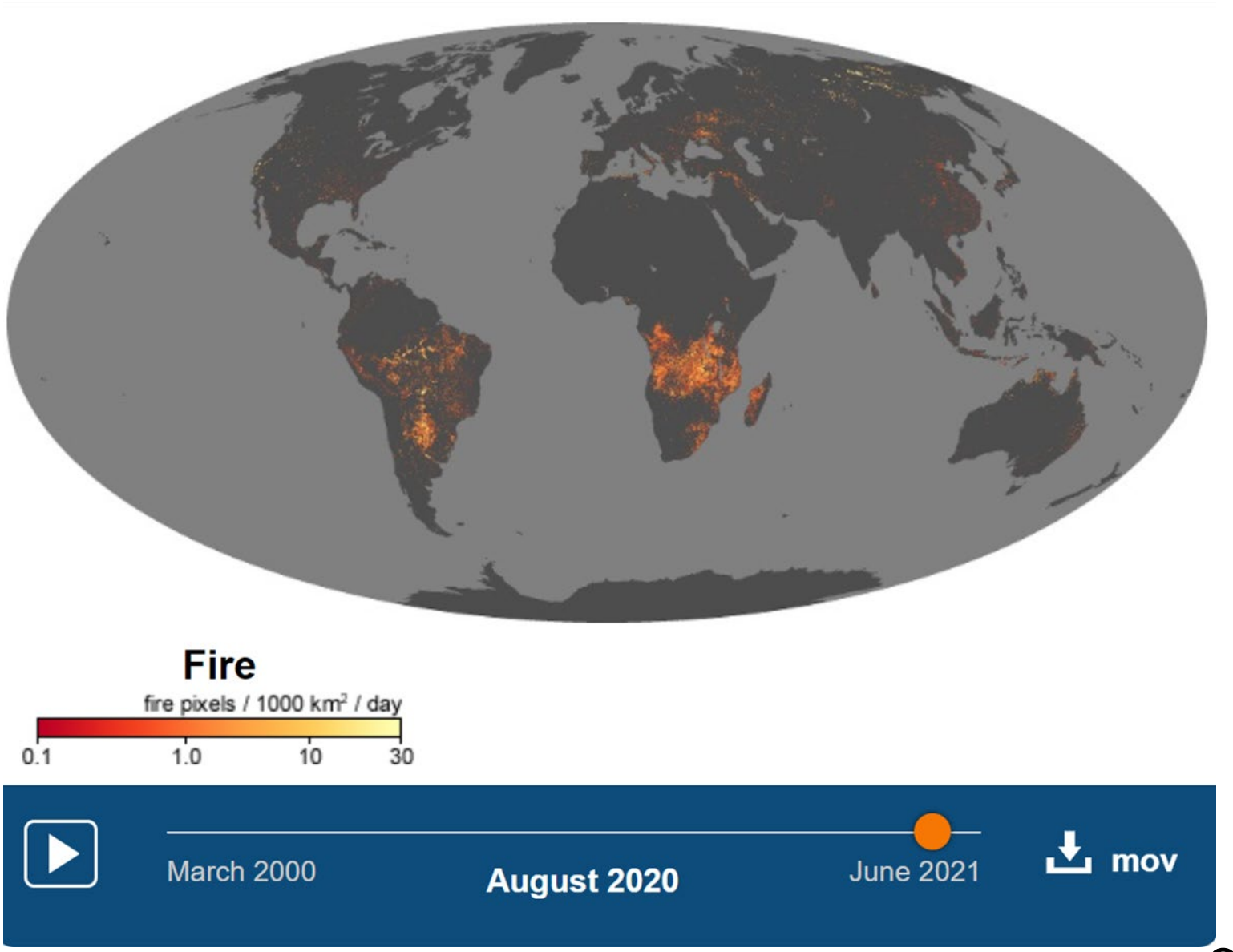
# Key points in the context of climate change

- Forest fires are a serious problem in developed and developing countries.
- Forest fires are an urgent issue, both locally and on a global scale.
- Responding to forest fires is both an adaptation and a mitigation measure.

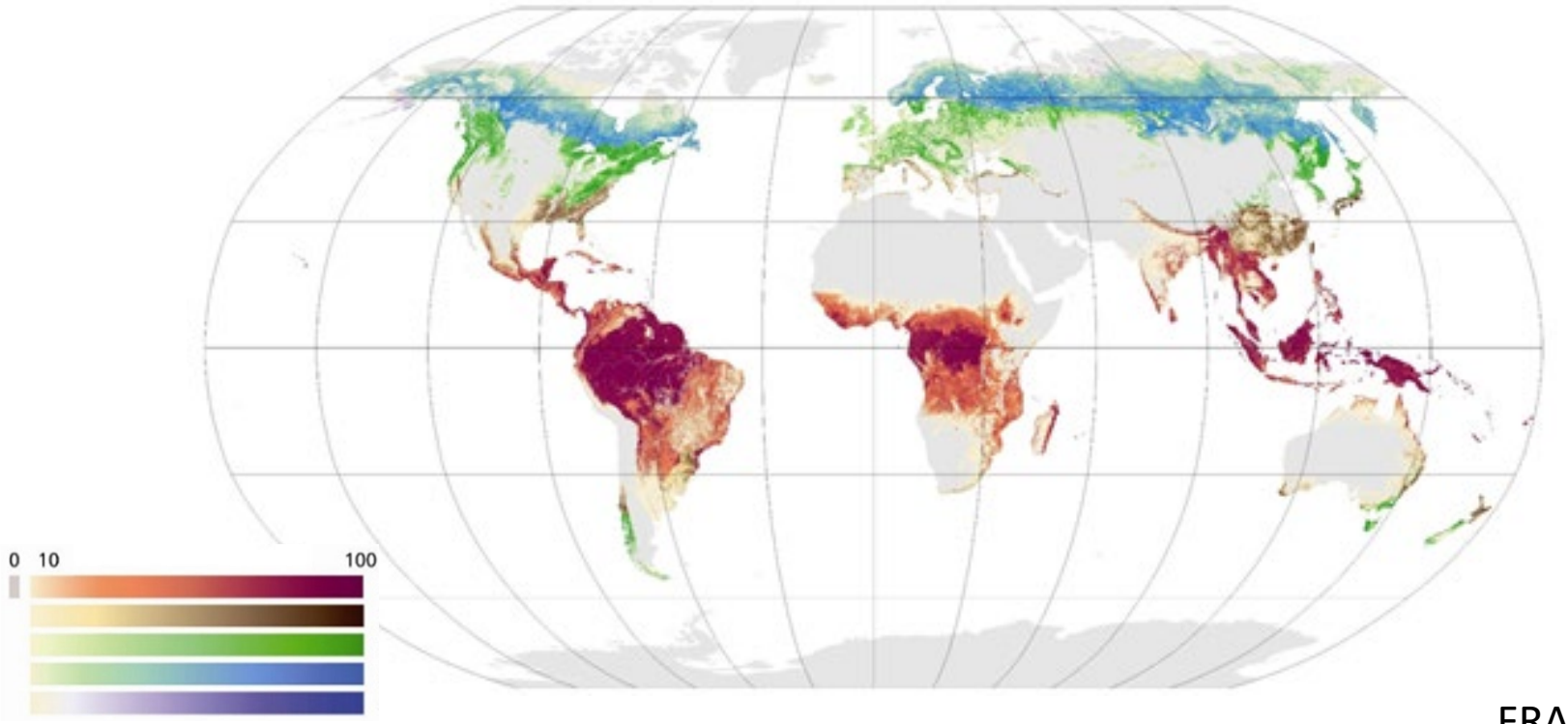
# Monitoring fire events from space



# Monitoring fire events from space



# Forest distribution by climate zone




FRA2015, FAO

- Fire in the tropics is the largest area loss.
- The problem is that areas with high forest cover coincide with areas of fire.

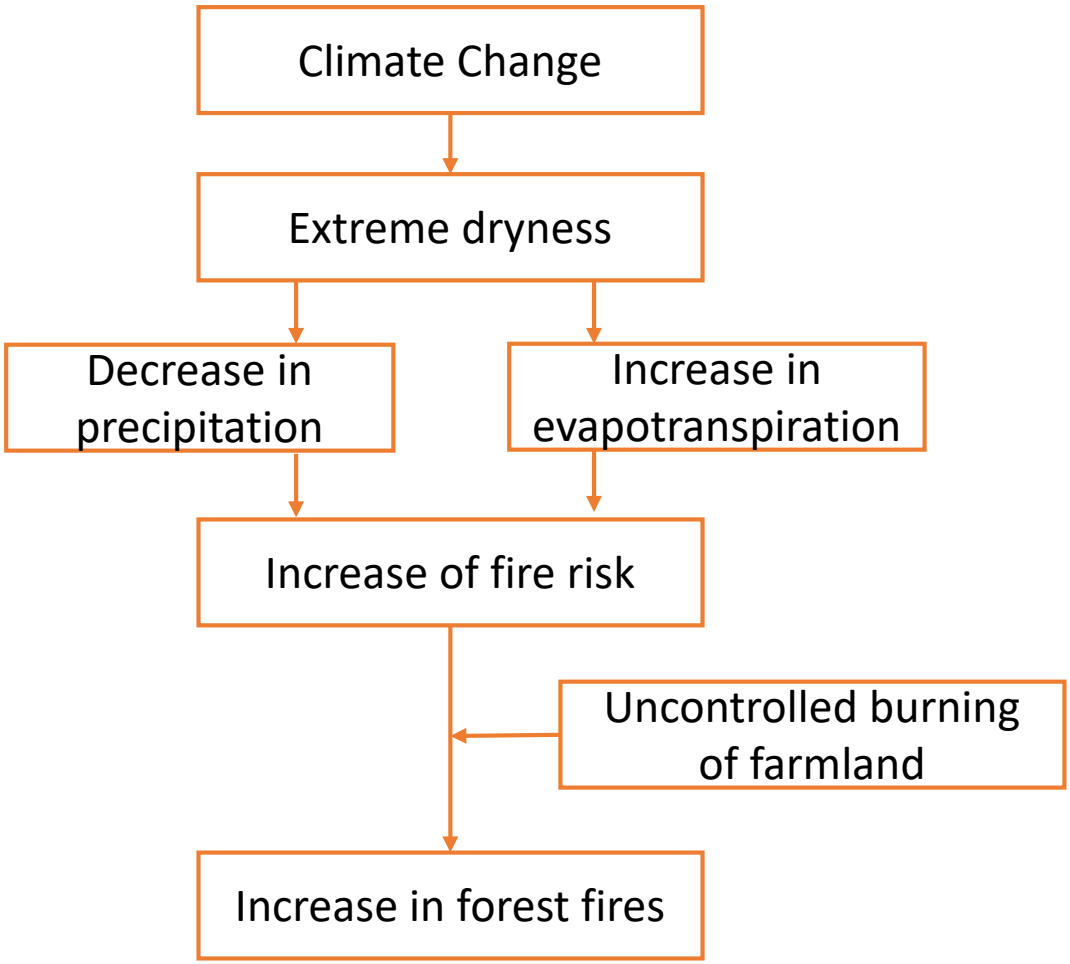
# Forest fire

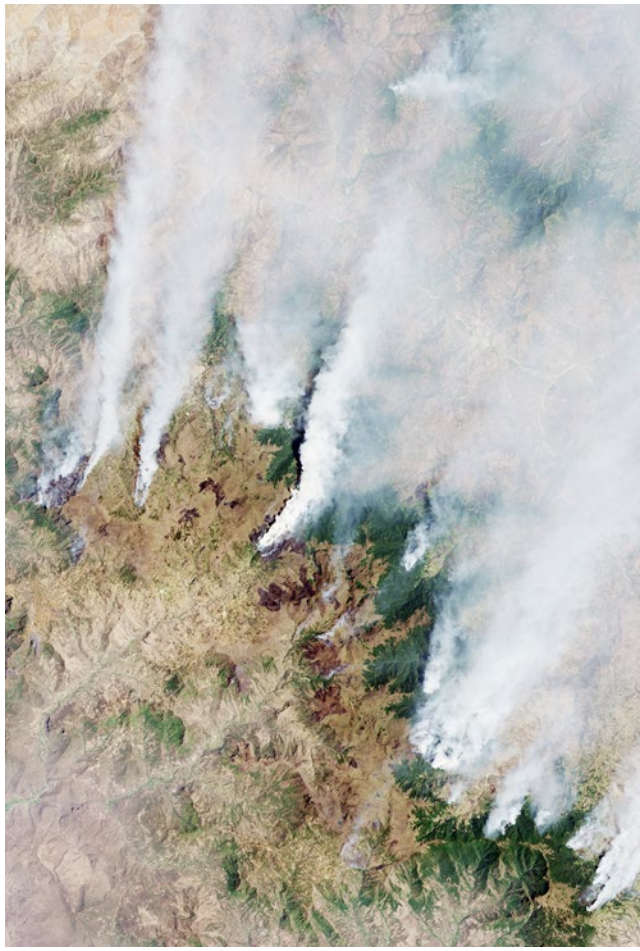
- Natural fire
- Human-caused fire
  - Land conversion
  - uncontrolled

It is sometimes difficult to distinguish between natural fires and human-caused fires, especially in developing countries.

# Increase of uncontrolled forest fire

## Process of increase of forest fire



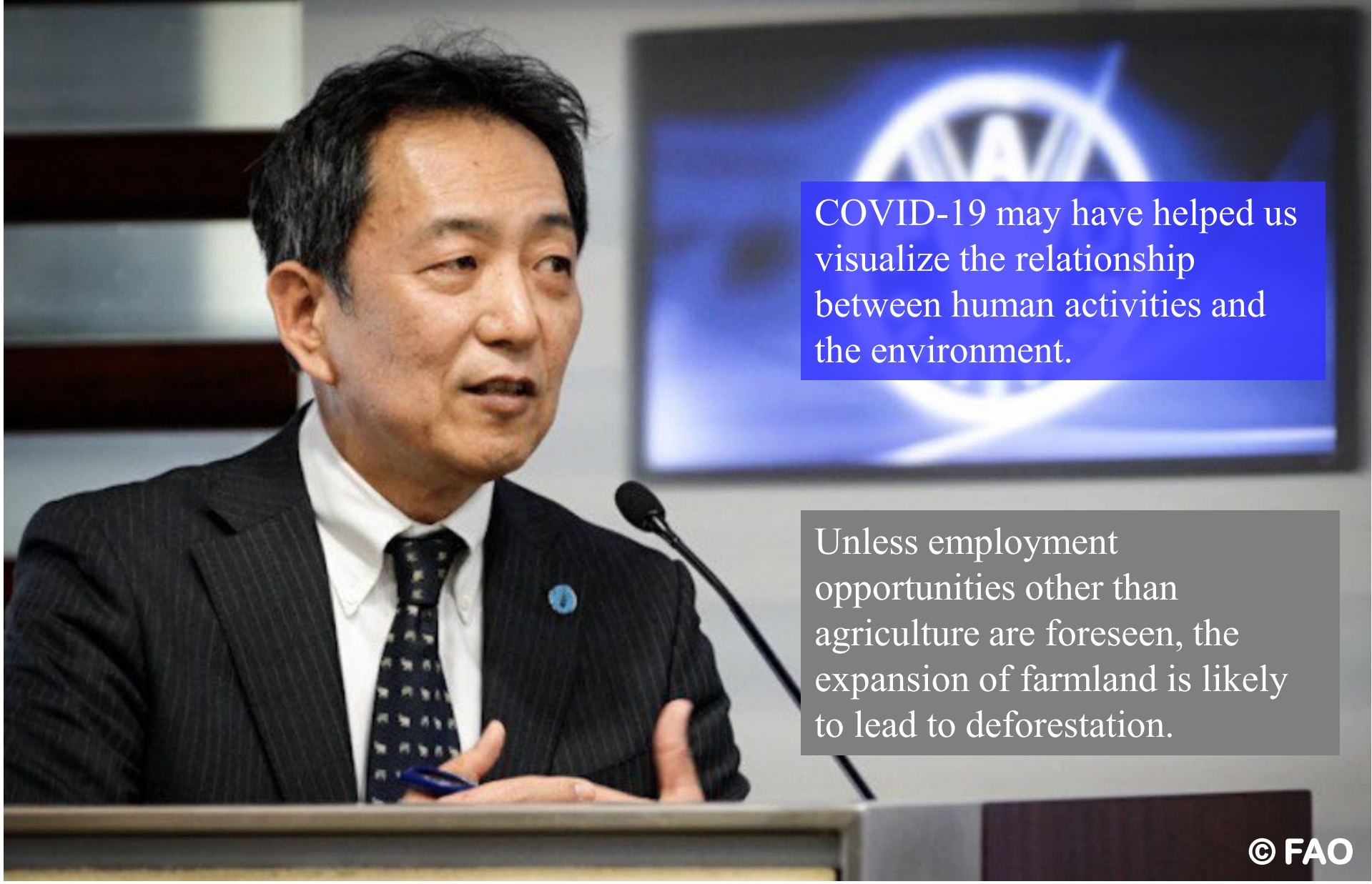



According to the IPCC Special Report on Climate Change and Land, activities in the agriculture, forestry and other land use sector (AFOLU) account for 23 per cent of total net anthropogenic emissions of greenhouse gases.

The IPCC identifies REDD+ as the activity with the largest potential for reducing AFOLU emissions.

From UNFCCC Web site

Illegal logging not only contributes to carbon dioxide emissions, but is also responsible for devastating forest fires.

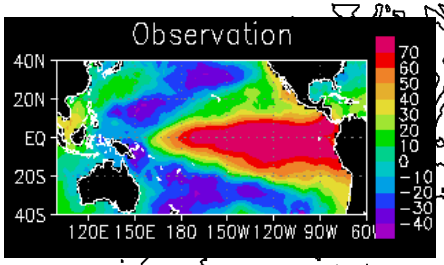



Food and Agriculture Organization of the United Nations
Former Assistant Director-General and Director of Forestry

Mr. Hiroto Mitsugi

# Effect on Biodiversity

the El Niño-Southern Oscillation phenomena




*YR. 1997～1998*

plantation

cultivation

FIRE

FIRE

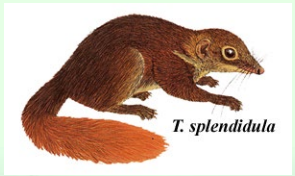
FIRE

**Spared to forests**

**Forest Fire at large scale**

**Effect on Biodiversity ?**

**Small-mammals**

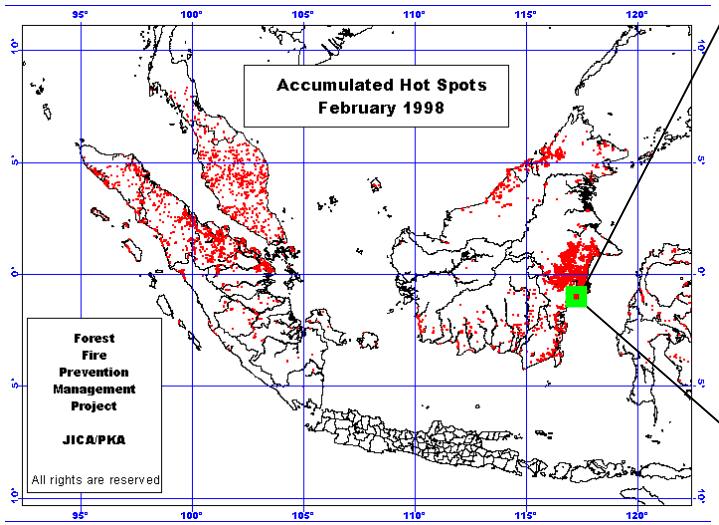


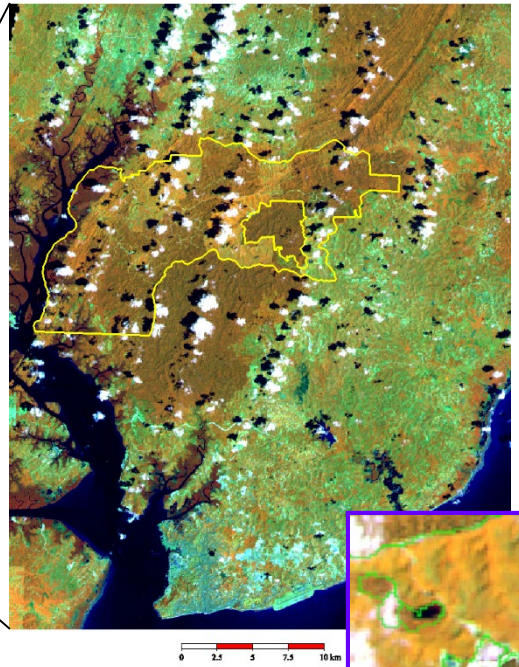




with LIPI and IPB

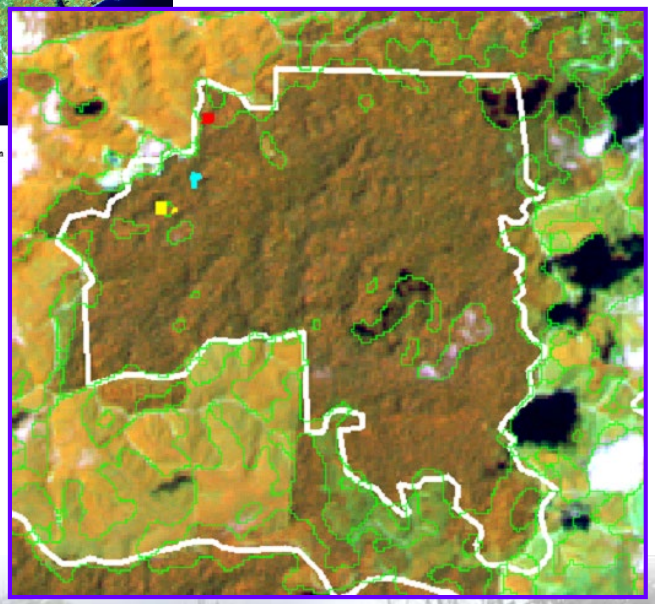
# Study Area



**Bukit Bangkirai**,
East Kalimantan,
Indonesia

Located at 25 km
north of Balikpapan



Hotspots in Indonesia in February 1998
(from the JICA Forest Fire Prevention Management Project)

*Many hotspots were observed in East-Kalimantan by NOAA satellite in early 1998*

with LIPI and IPB

# Database of plot characteristics
(Lightly damaged)

## Field Survey at the point of Tr07

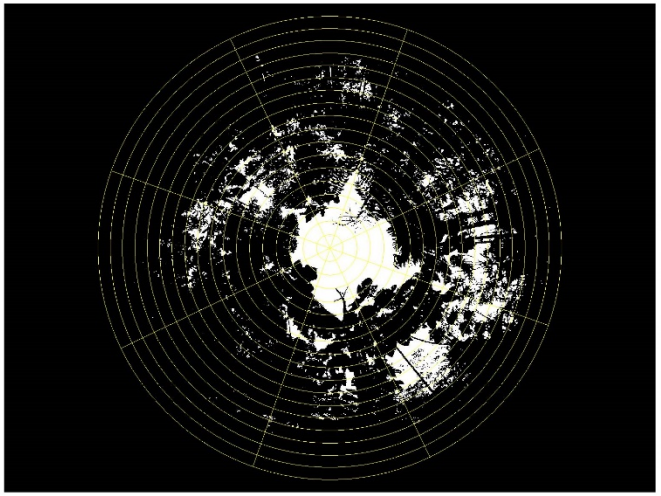
*Site Description*

Coordinates 487912E 9887236N

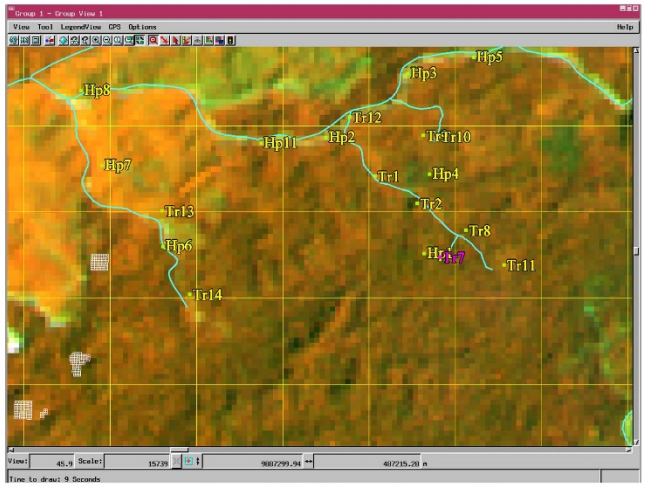
UTM Datum: Indonesian 1974 Zone: 50 South

Basal Area: 34(34) $m^2$ Highest tree: 33 m

Number of Dead trees (within 10 m): 0 LAI: 3.210



Hemispherical photo at Tr07




The position of Tr07 on the satellite map

# Database of plot characteristics
(heavily damaged)

## Field Survey at the point of Tr04

*Site Description*

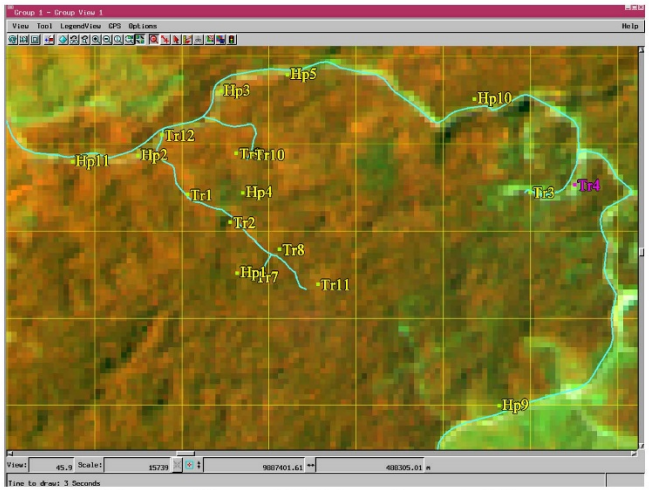
Coordinates 489757E 9887762N

UTM Datum: Indonesian 1974 Zone: 50 South

Basal Area: 12( 4) $m^2$ Highest tree: 26.8 m

Number of Dead trees (within 10 m): 7 LAI: 0.492

Hemispherical photo at Tr04




The position of Tr04 on the satellite map

## Capture of Small-mammals

We captured ***70*** animals of ***15*** species in ***52*** plots

***Tupaia glis***

***18***

***16***

***Rattus tiomanicus***

***Tupaia splendidula***

***8***

***Maxomys whiteheadi***

***6***

***Niviventer cremoriventer***

***5***

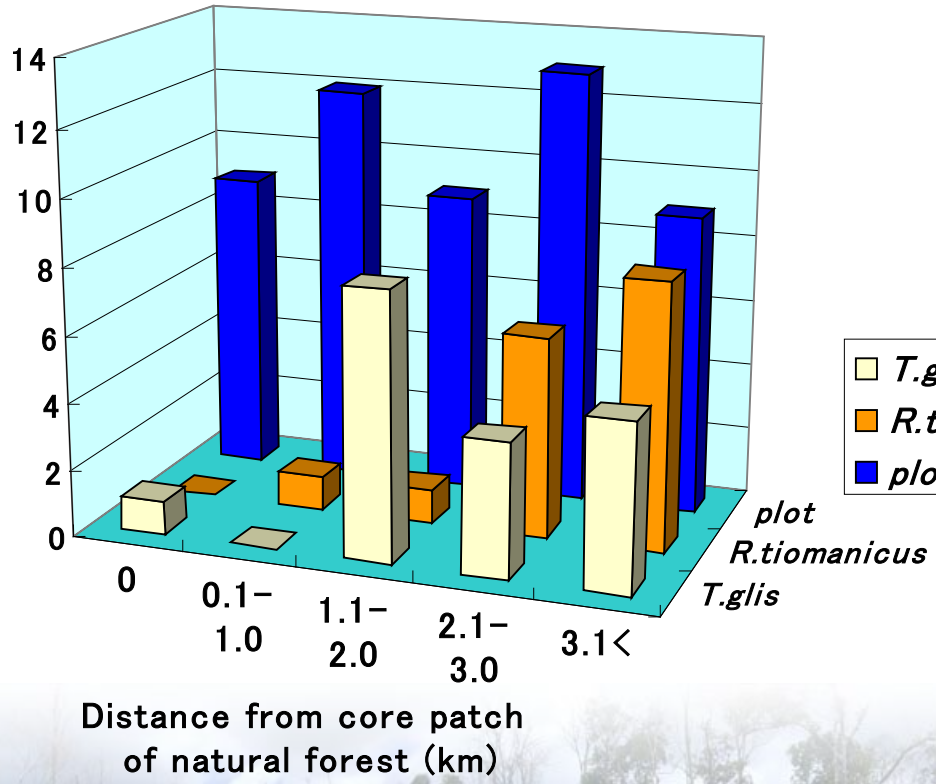
*Callosciurus notatus - 3*
*Tupaia tana - 3*
*Tupaia gracilis - 2*
*Tupaia picta - 2*
*Sundamys muelleri - 2*

*Lepoldamys sabanus - 1*
*Mus caroli – 1*
*Rattus exulans - 1*
*Maxomys surifer - 1*
*Rattus tanezumi - 1*

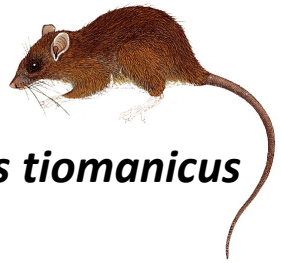
with LIPI and IPB

# Distance and Occurrences

- The small herbivorous animals appeared in heavily degraded forests after forest fires.
- Small animals that survived after forest fires were migrating to areas where they could grow.




***Tupaia glis***



***Rattus tiomanicus***

with LIPI and IPB

# Conclusions

- Forest fires are an issue that needs to be addressed for climate change mitigation and adaptation in both developing and developed countries.
- Forest degradation needs to be recognized not only from a REDD+ perspective, but also as a risk to the spread of forest fires.
- The effect of forest fire on biodiversity should be investigated further.

Thank you for your attention!

*on 4 September 2002*
*in Bukit Bangkirai, East Kalimantan*