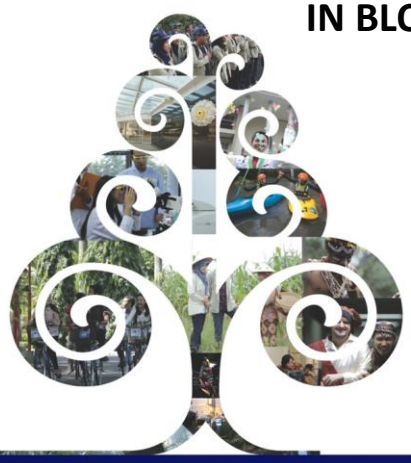
UNIVERSITAS GADJAH MADA

# EFFECT OF THE REWETTING PROCESS IN DEGRADED TROPICAL PEATLAND IN BLOCK A, SEI AHAS, EMRP AREA, CENTRAL KALIMANTAN

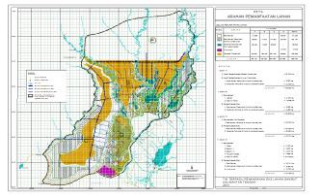


**Novitasari**

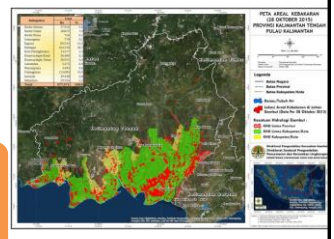


## RESEARCH BACKGROUND

Forest and peatland have been degraded with 2.2 million hectares in Indonesia, especially in Kalimantan dan Sumatera



Mega Rice Project Area (EMRP) of a million hectare of peatlands in Central Kalimantan 1995 - 1999



Forest and peatlands have been **degraded** by construction of drainage networks, illegal logging, and land clearing with fire

# RESEARCH PURPOSES

**Research purposes**:

The purpose of this present research is to study the environmental impact in the rewetting process after wildfires in Block A, Sei Ahas by comparing the rewetting area with no rewetting area.

**Restoration procces**:

The aim is to determine correlation among meteorology and groundwater table factor in the rewetting process to vegetation recovery in the upstream canal

**Research Field:**

Primary Research is a literature study from Drought Index Modification on wildfires Peatland in Central Kalimantan

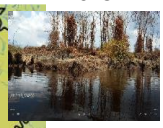


# RESEACH AREA

Wildfire in October 2015




2015 2017 2018



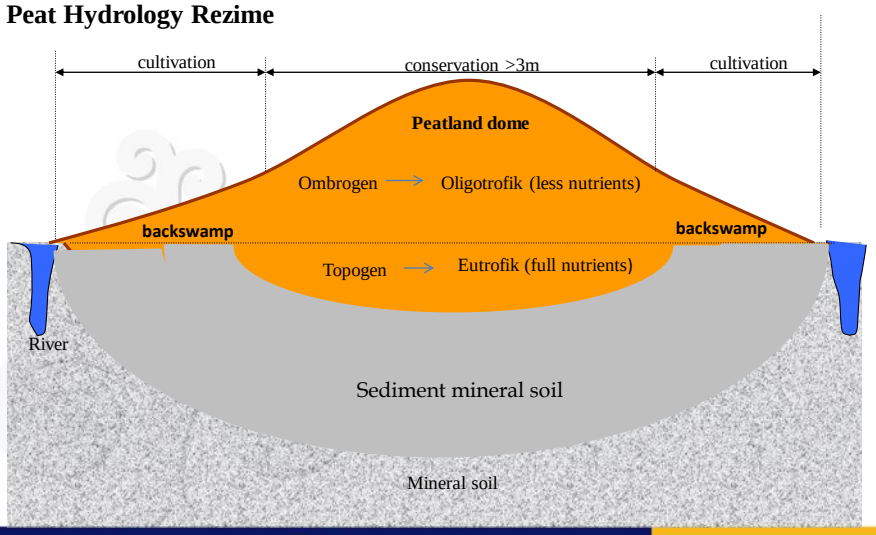
Canal C

Canal D

Canal E

# PEATLANDS ECOSYSTEM

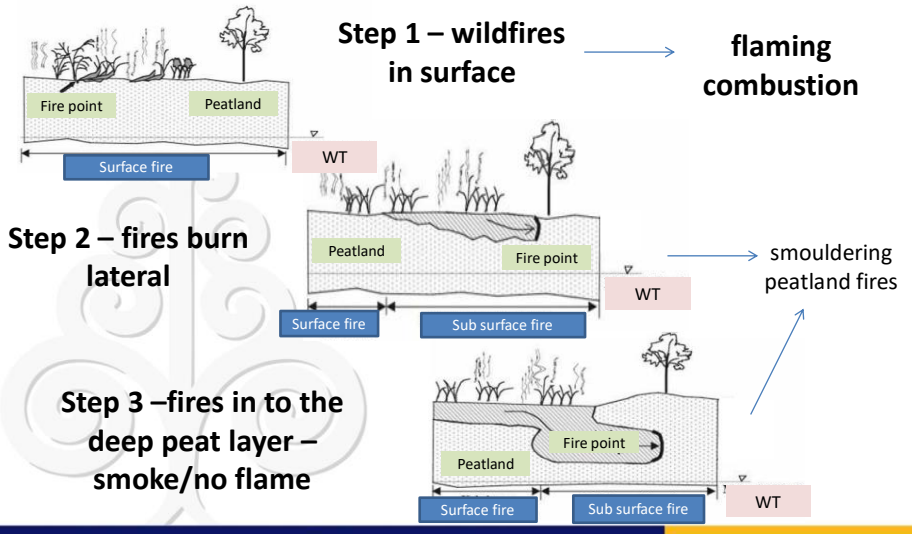
**Peat Hydrology Rezime**






# PEATLANDS DEGRADATION

# WILDFIRES PEATLAND PROCCES






# WILDFIRES PEATLAND EFFECT

**On site effect**

loss of peat layer and environmental damage

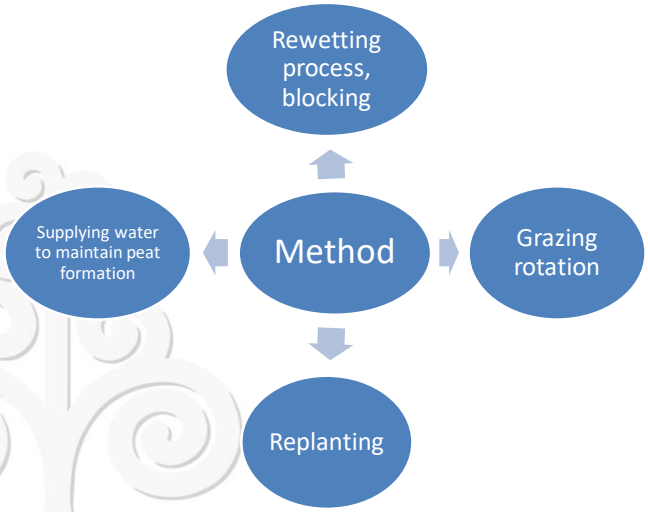
**Of site effect**

Smoke that disturbs the environment

**Post effect**

recovery process in the form of efforts to regulate the water system

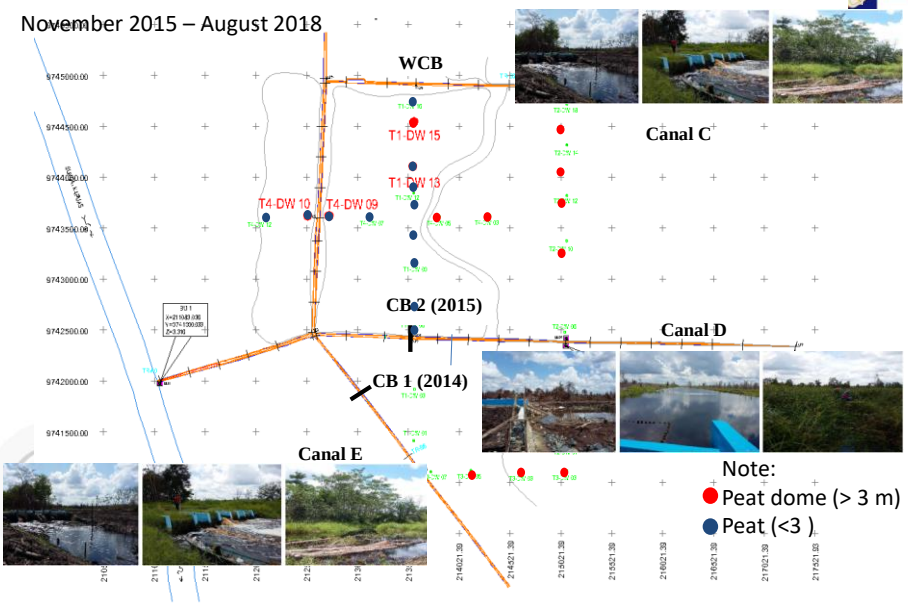
# RESTORATION METHOD





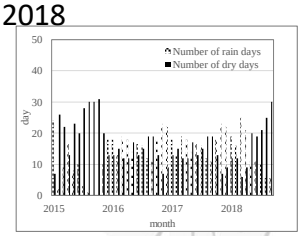

# FIELD OBSERVATIONS

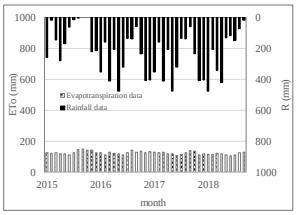
November 2015 – August 2018

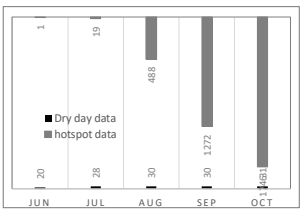


# Meteorology Data

The relationship between rain days, dry days, evapotranspiration and number of fire alerts. The data collected from 01 Jan 2015 to 30 Sept 2018



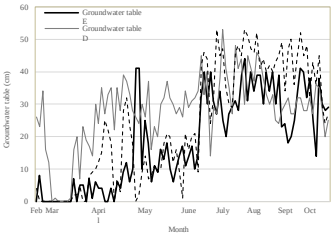

The highest evapotranspiration data correlates with the lowest rainfall. From 2015 to 2018, lower rainfall data only take time from August to September every year. Based on the availability of rainfall data, that influences peatland degradation is the number of dominant dry days.

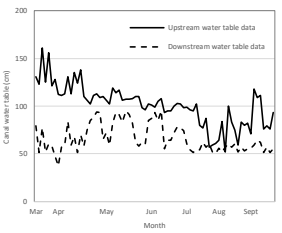
If a day without rain, the water cycle in peatlands is only affected by evapotranspiration and groundwater table. Correlation between hotspot data in Mantangai and dry days from June to October 2015. Some dry days dominant in August to October lead to a large number of hotspot events.

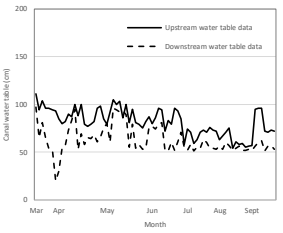


# Water table Data

Observation groundwater table observation started from February to September 2018. Canal water level monitoring from March to September 2018.



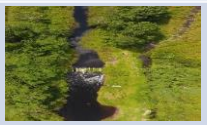




Monthly average groundwater table stable below 40 cm in each canal, except in canal D at July as 40.5 cm, and canal C from July to September as 43.1 – 44.6 cm. This groundwater table is only affected by water seepage in the canal which is reduced by evaporation if the day without rain.

The water level monitoring in the downstream and upstream part of the canal D and E. The water level in the upper part of the block can be maintained as a rewetting process. There is not much changing since it was built. The process of land subsidence can also be controlled.

# Vegetation Recovery

| | 2015 | 2018 | |
|---|---|---|---|
| Canal C |  |  | All land in canal C had burned in 2015, and remind not have many changing in 2018 based on vegetation. Big trees still not much grown. |
| Canal D |  |  | All upstream canal D had burned in 2015, and 2018 can be seen the different, vegetation started to recovery. |
| Canal E |  |  | In 2018 not only vegetation that recovery but the upstream canal is getting smaller covered by the dead trees. |
| Citra |  |  | Citra lands that took in the end of 2015 and 2018. |



# Discussion

1. **Effect of rainfall intensity, dry day and evapotranspiration to the groundwater table**
   The water table is strongly influenced by rainfall intensity, dry days and evapotranspiration. In canals C, the water table in earlier of the dry season from 23.31 cm to 68.65 cm. In canal D from 29.32 to 39.15 cm and in canal E from 19.64 to 47.54 cm. Finally made the land drought and flammable. It parallel with hotspot data from July to October.
2. **Effect of the groundwater table and vegetation recovery in the rewetting process**
   The changes in the appearance of vegetation are considered as the success of the rewetting process. Especially in block E with the longer time of the rewetting process, not only vegetation recovery but also the canal width around upstream canal blocking.

# CONCLUSION

1. The restoration methods with the rewetting process in canal D and E, Block A, Sei Ahas Peatland, Mantangai Sub District, Kapuas District, Central Kalimantan based on groundwater table observation, rainfall intensity, dry days, evapotranspiration, and hotspot data has given the excellent result in a short time observation.
2. The rewetting process indicated that the trend of the groundwater table in degraded peatland remained stable. Vegetation recovery in upstream canal D and E different from vegetation in canal C after about five years restoration with the rewetting process.
3. All variable studies still showed significant change during years after rewetting. It still needs long-term observation to make sure that the rewetting process gives a clear result for peat environmental sustainability.



UNIVERSITAS GADJAH MADA

# THANKS YOU

Mengakar Kuat Menjulang Tinggi