OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

INSTITUT FÜR APPARATE- UND UMWELTTECHNIK

TREEADS

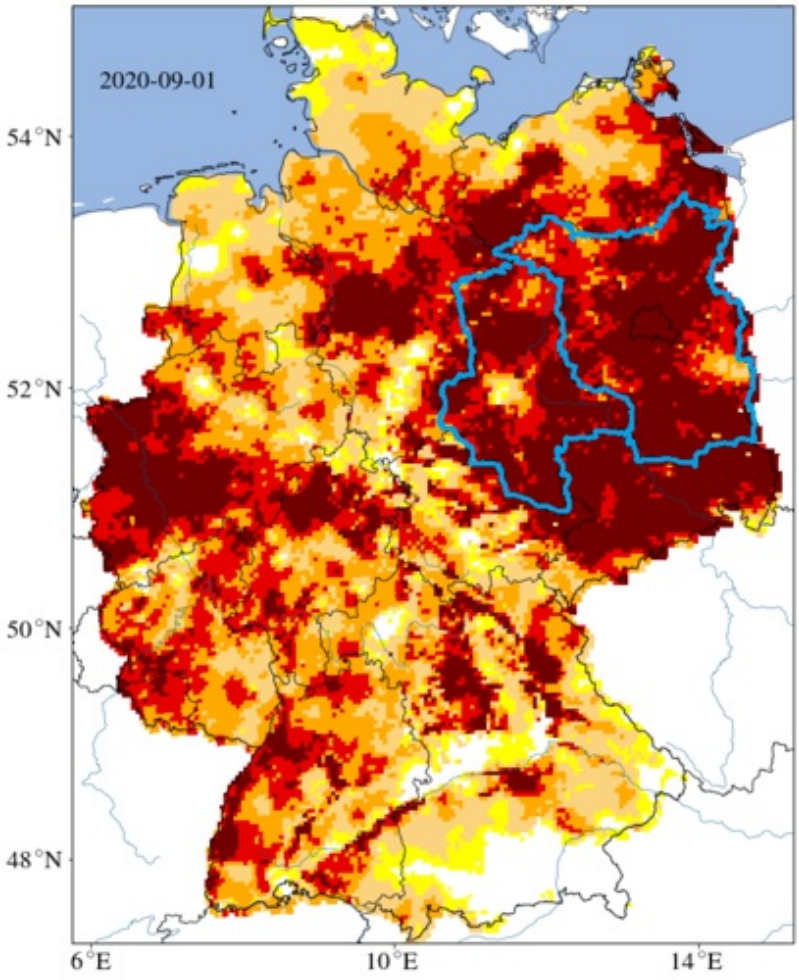
(Ganzheitliches Brandmanagement-Konzept zur Verhütung, Erkennung und Behebung von Umweltkatastrophen)

German Pilot Project: Fire Science of wildfires and safety measures

(Brandforschung bei Waldbränden und Ableiten von Sicherheitsmaßnahmen)

Foundation: HORIZON 2020, IA, Call: H2020-LC-GD-2020 / H2020-LC-GD-2020-3

A direct consequence of climate change are longer drier periods of drought, even in countries which traditionally had a lot of ra e.g., in Germany. The German provinces Saxony-Anhalt and Brandenburg are two of the most affected by extreme dryness Germany. Concurrently dry summers have led to substantial amounts of dry biomass and increasing damage due to insects a diseases. Extreme weather as heavy rain and storms have led to additional damage in the forests.



Dryness of ground in Germany in September 2020, darker colour – severer dryness[1]

In Germany about 32 % of the surface area is covered by forests. In Saxony-Anhalt and Brandenburg, a sizeable percentage the forest vegetation is composed of pine trees which can survive on poor soils. Efforts are being made to change the diversity the forests to ensure survival and enhance robustness. Often the forests are part of conservation areas with strict protection ru against contamination and damage. Over the past five years these regions have seen fires that are growing in number, sever and affected area. The dryness monitor for Germany shows that Saxony-Anhalt and Brandenburg are some of the driest parts Germany. Most fires in both provinces have been ground fires which are dependent on dryness and dead organic material. It crucial to understand the mechanisms of fire spread in ground fires for these areas with their habitat and vegetation under t growing influence of dryness and damaged vegetation. To achieve this, experiments in medium and large scale are undertak using ground specimen up to several square meters, to evaluate the dependence of the fire spread on various kinds of vegetati as well as different amounts of organic mass in the ground and dryness. Smoke production and smoke toxicity depend on t combustion conditions – availability of oxygen, and heat transfer, as well as the kind of vegetation that burns. Better understandi these mechanisms allows for more precise prediction of fire and smoke development which is crucial for assessing and improvi firefighting tactics. A catalogue of different wildfire scenarios is to be developed and is the basis for recommendations firefighting measures. On the one hand water is argued to be the most eco-friendly extinguisher. On the other hand, substant amounts of water are often necessary, especially in ground fires. Additives can lead to a significant increase in volume a therefore help to preserve water which is a valuable resource in dry areas. Effective extinguishment reduces damage as it important to assess both: the damage to the ecosystem due to the fire itself and the extinguishment method. It is expected th different extinguishment methods and firefighting measures are necessary for different fire scenarios and depend on vegetatio weather, topography, and area. In an area with restrictive conservation rules other measures and extinguishment agents might applicable than in an industry wood area. Pollution of air, ground and water are to be assessed. Smoke production of these fires a health risk for fire fighters as well as for inhabitants of villages close to forest areas. Safety measures and guidelines situations with high smoke production, smoke movement and dispersion are fundamental for safety of fire fighters and inhabitar Evacuation of villages are a strong measure and must be assessed to give guidelines when it is necessary to undertake them.

[1] (file:///E:/GD/Dokumente/DRYADS/Dryads_German-Pilot_v0.2_AK.docx#_ftnref1) › https://www.ufz.de/index.php?de=379

(https://www.ufz.de/index.php?de=379

› **Objectives** (https://www.iaut.ovgu.de/Lehrst%C3%BChle/Anlagentechnik+und+Anlagensicherheit/Forschung/TREEADS/Objectives.html)

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