

Online Workshop

The status of Mycotoxins predictive models in Africa

26th October 2020



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"Flexible predictive models for
mycotoxin in maize, useful at global
level and in climate change scenarios"

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Mycotoxins –maize mechanistic models

MAIZE



Aspergillus flavus

Fusarium verticillioides,
F. proliferatum

F. graminearum

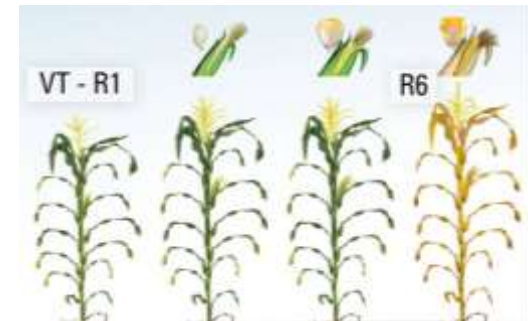
Aflatoxins

Fumonisin

Deoxynivalenol

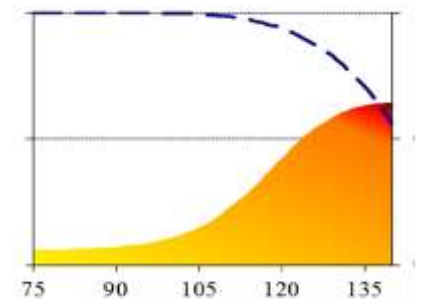
Weather data

CROP PHENOLOGY



Fungi
infection
cycle

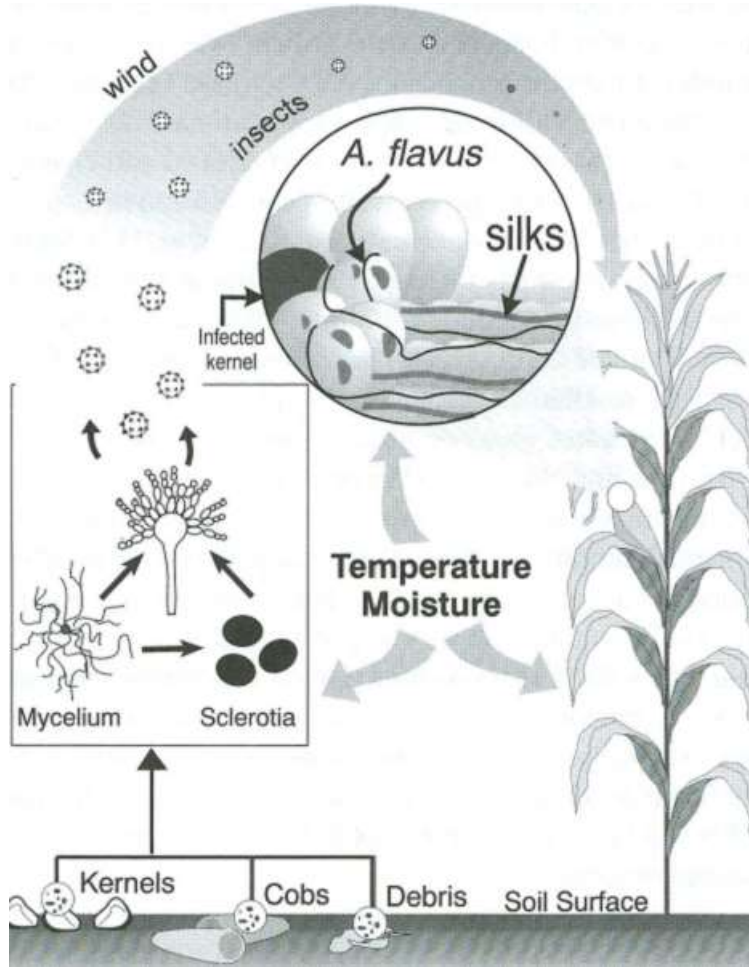
*Dynamic daily
MYCOTOXIN PREDICTIONS*



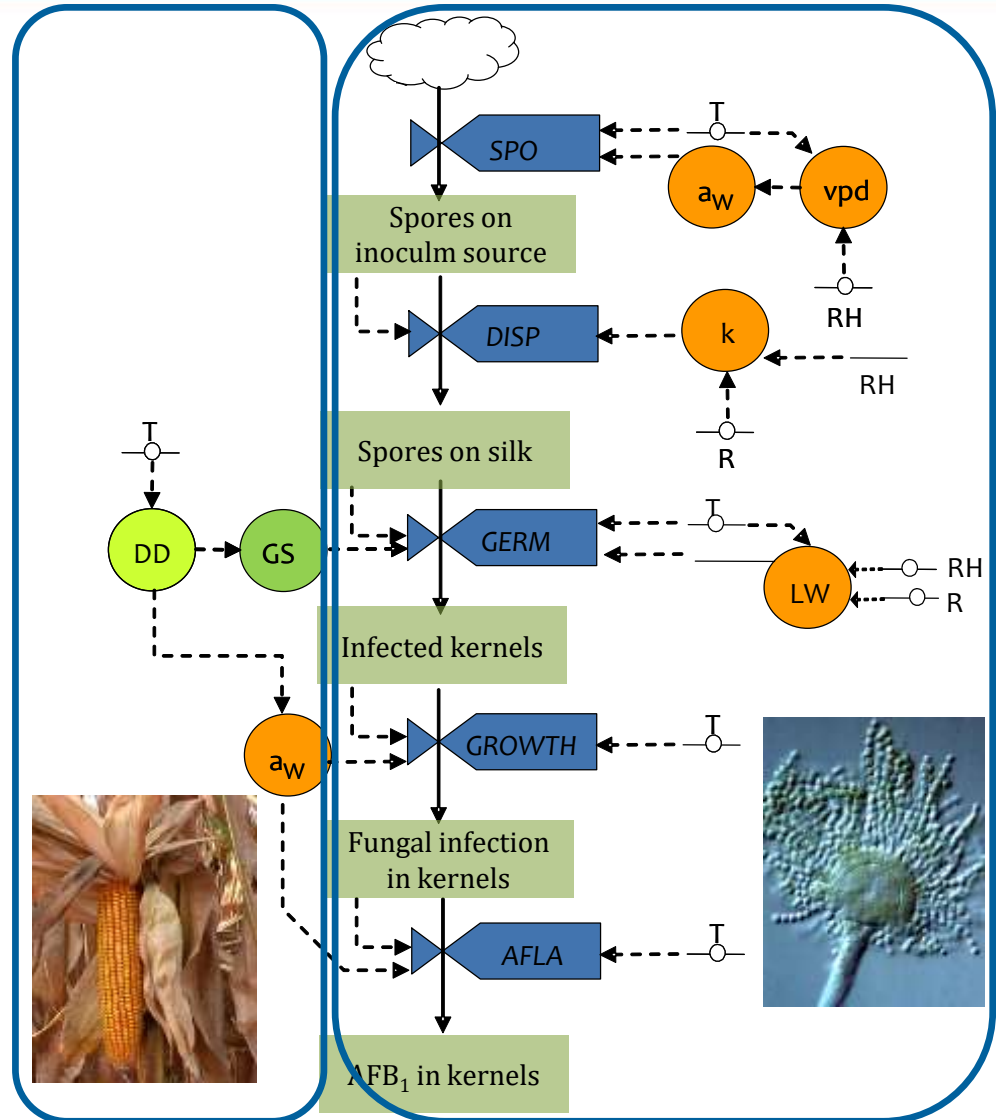


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A. flavus – maize – aflatoxin B₁



Payne et al., 1998

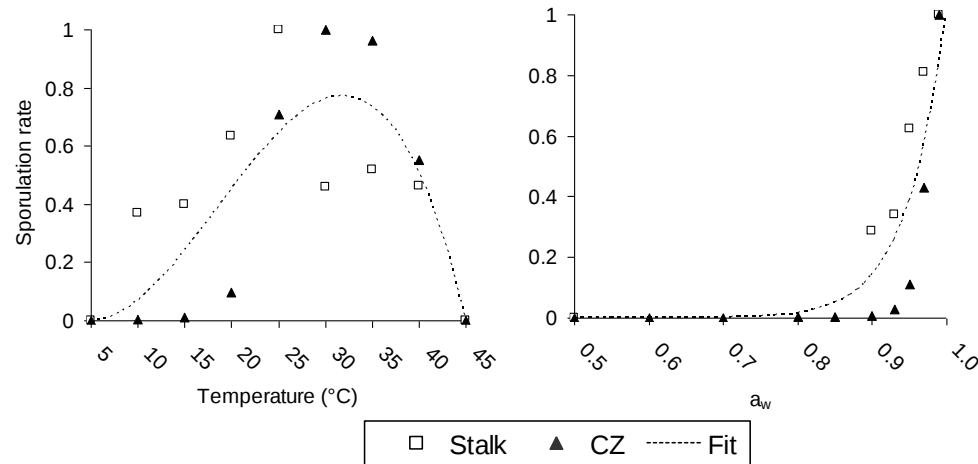




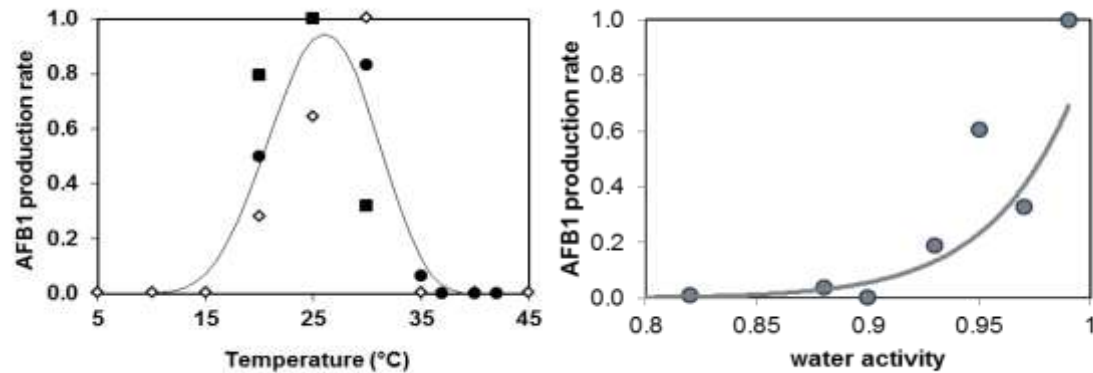
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A.flavus – maize sporulation, AFB1 production

SPO

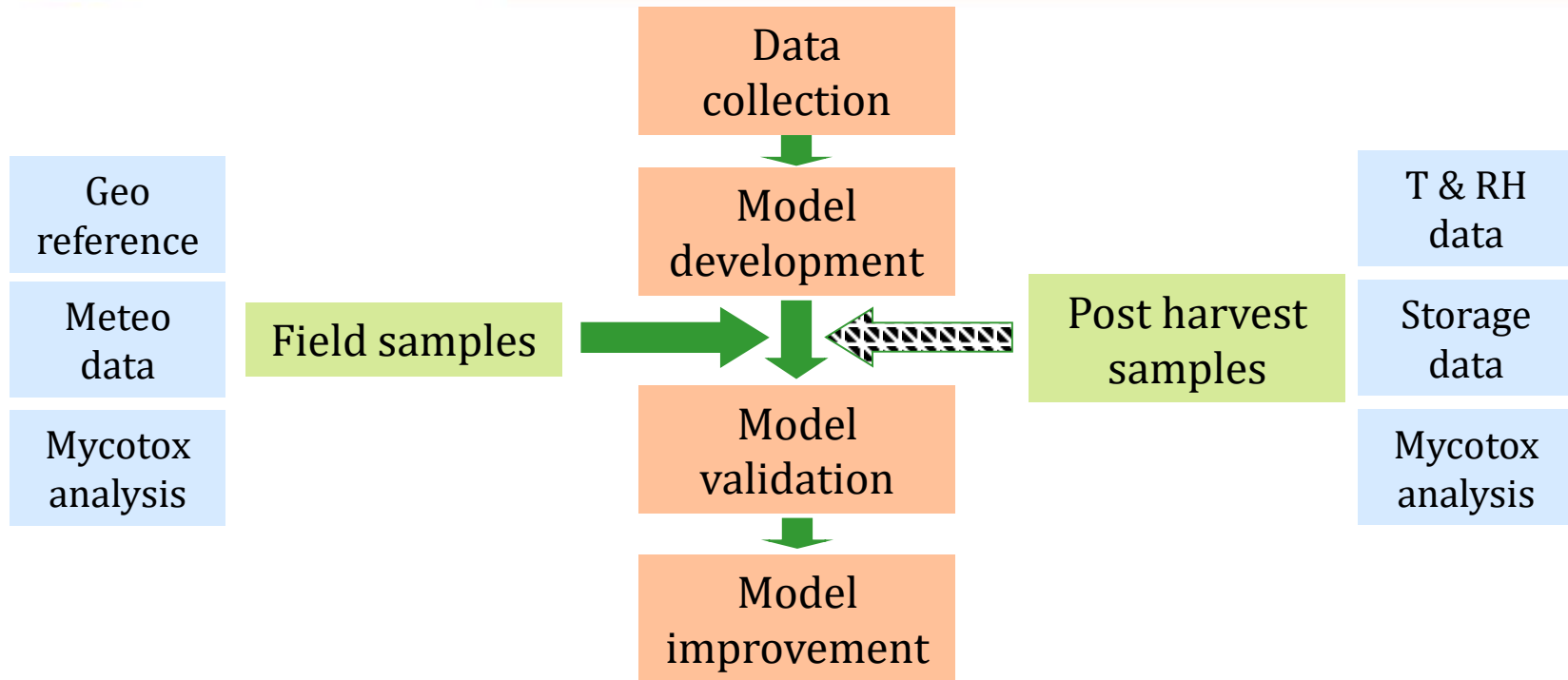


AFB1





Modelling – work flow



Model input: hourly meteorological data

Model output: daily Aflatoxin/Fumonisin Index **AFI/FUMI**

Risk of contamination above a threshold, the EU legal limit



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Support from predictive models

Hystoric
data

Past scenario

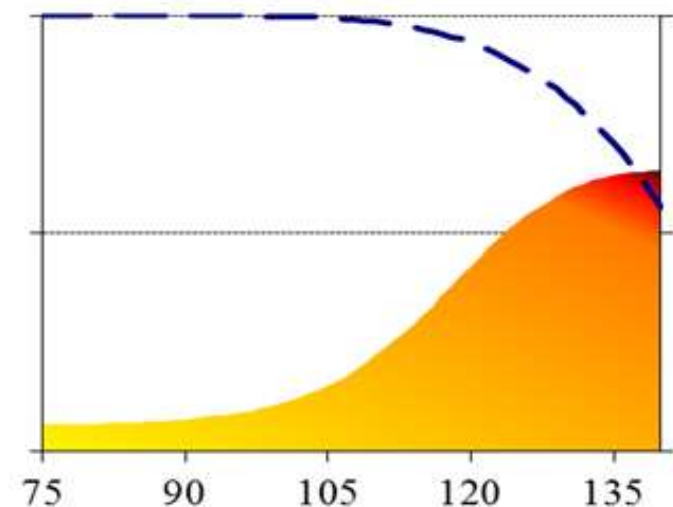
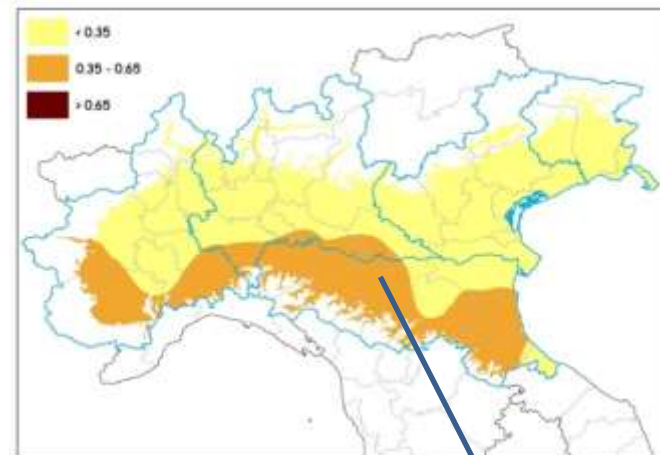
Actual
data

Ongoing risk

Focus risk areas

Rationalise pre- & post-
harvest management

Opt sampling & analytics



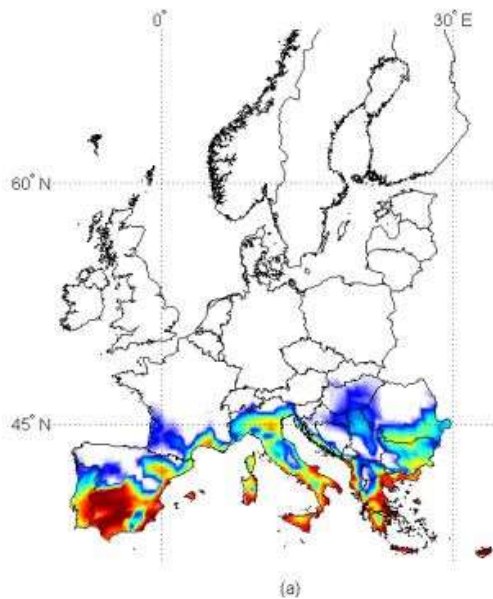


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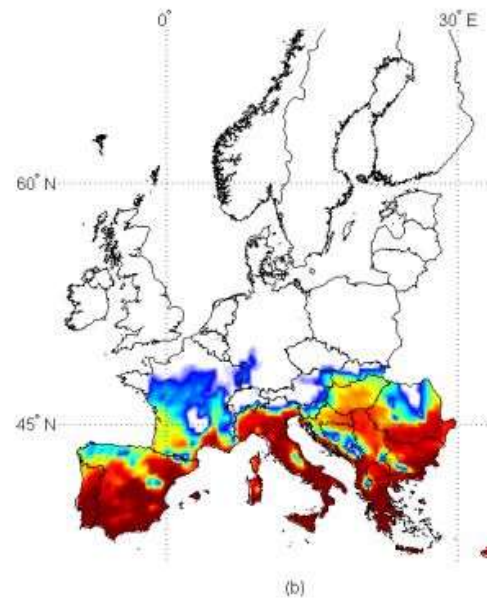
Future scenario – risk maps, AF in maize

Future
data

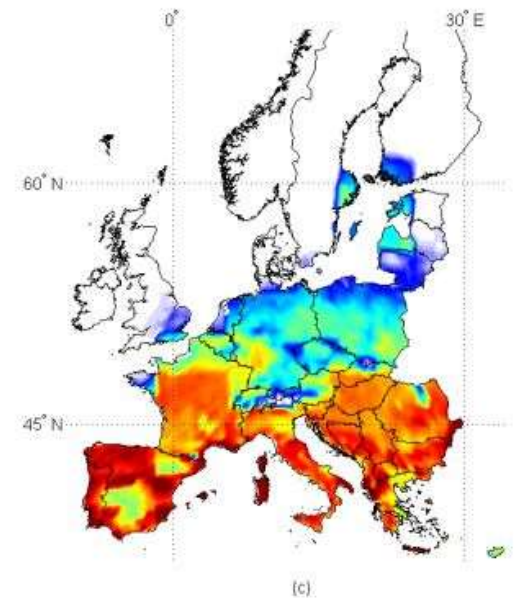
Future
scenario



actual



+2° C



+5° C

Decision makers, Institutions,
researchers...

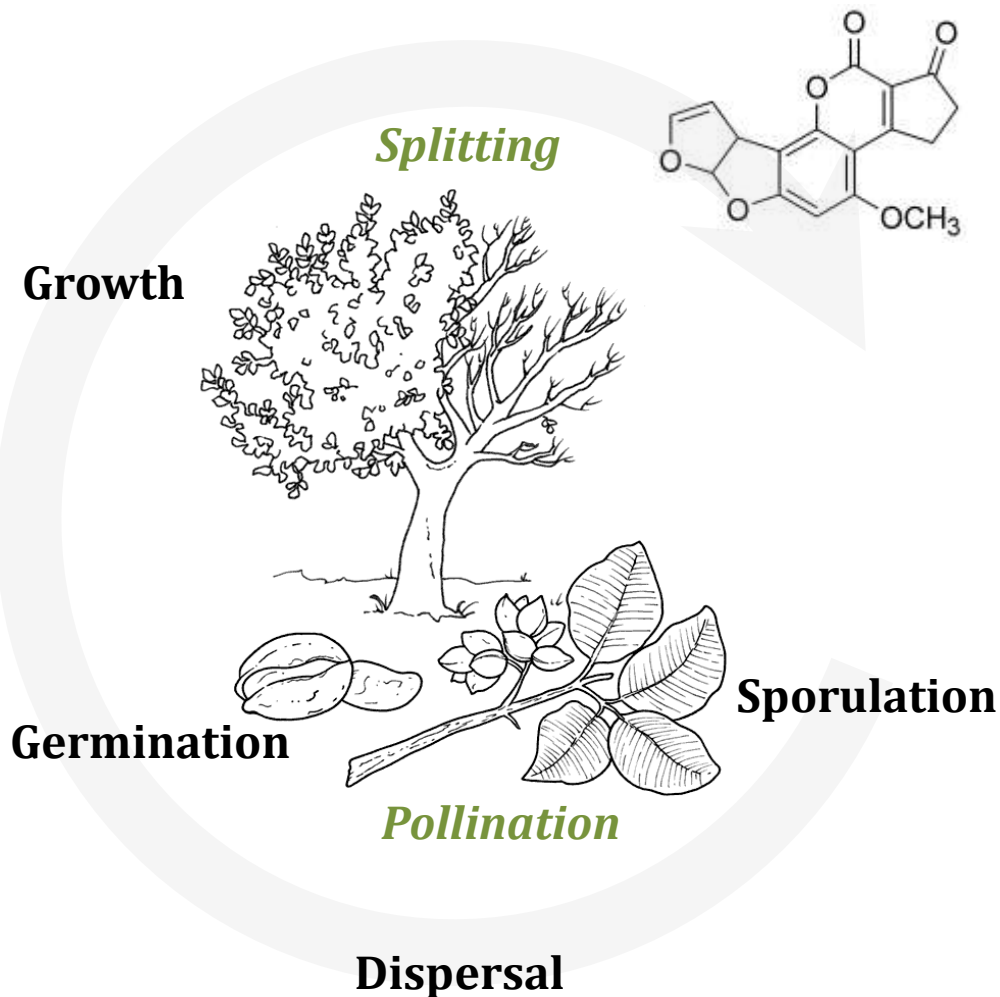
Focus risk areas

Build strategies



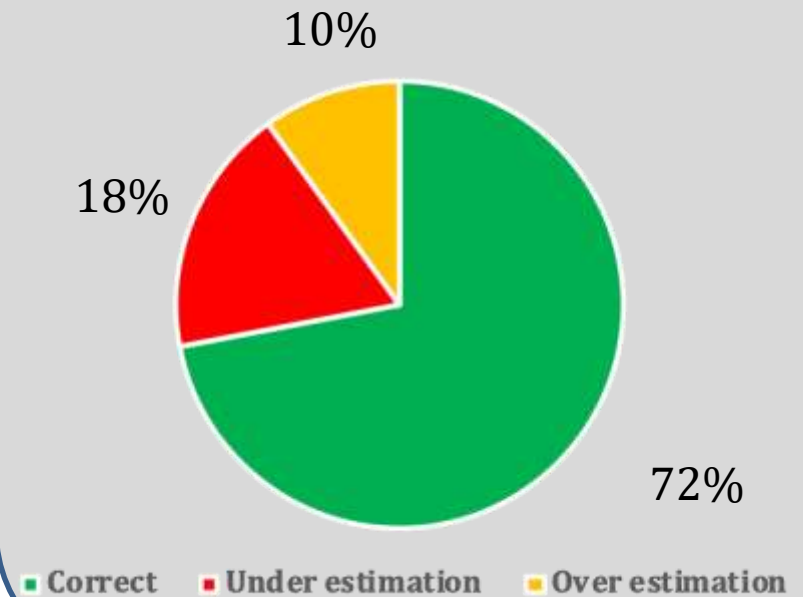
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Model transfer AFLA_pistachio



Validation

Field contamination data 2014+2015



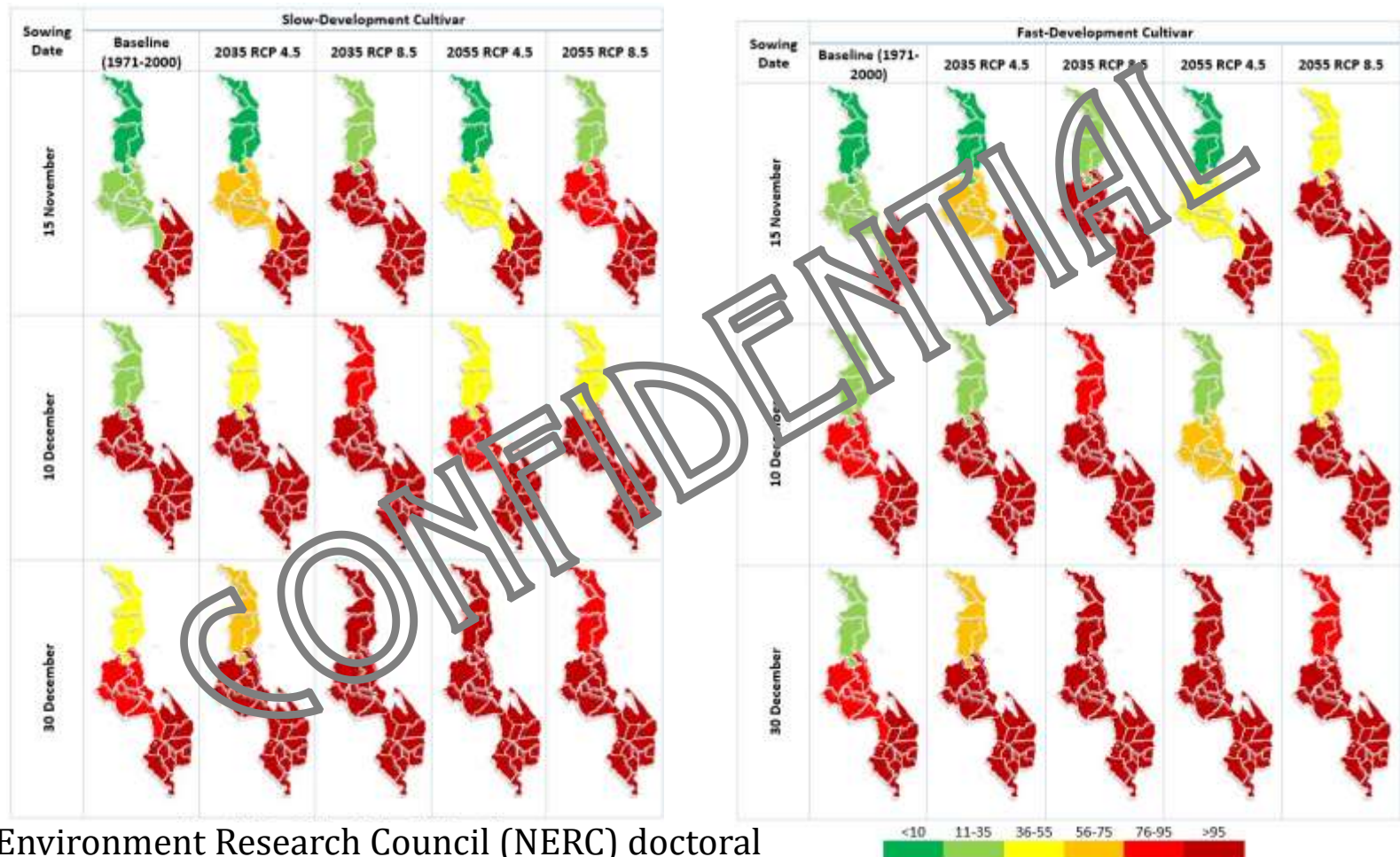


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Climate change – AFB1 - Malawi

Climate Change scenarios

Sowing date



Natural Environment Research Council (NERC) doctoral training partnership grant (NE/L002558/1)

Erika A Warnatzsch, David S Reay, Marco Camardo Leggieri & Paola Battilani, submitted



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Thanks for your attention