



Jul 11th, 9:10 AM - 9:30 AM

webXTREME: a simple web tool for calculating agroclimatic indicators of extreme events

Tommy Klein

Agroscope, Institute for Sustainability Sciences, tommy.klein@agroscope.admin.ch

Argyris Samourkasidis

Democritus University of Thrace, argysamo@gmail.com

Ioannis N. Athanasiadis

Wageningen University, ioannis@athanasiadis.info

Gianni Bellocchi

French National Institute for Agricultural Research, gianni.bellocchi@clermont.inra.fr

Pierluigi Calanca

Agroscope, Institute for Sustainability Sciences, pierluigi.calanca@agroscope.admin.ch

Follow this and additional works at: <https://scholarsarchive.byu.edu/iemssconference>

 Part of the [Civil Engineering Commons](#), [Data Storage Systems Commons](#), [Environmental Engineering Commons](#), [Hydraulic Engineering Commons](#), and the [Other Civil and Environmental Engineering Commons](#)

Klein, Tommy; Samourkasidis, Argyris; Athanasiadis, Ioannis N.; Bellocchi, Gianni; and Calanca, Pierluigi, "webXTREME: a simple web tool for calculating agroclimatic indicators of extreme events" (2016). *International Congress on Environmental Modelling and Software*. 11.

<https://scholarsarchive.byu.edu/iemssconference/2016/Stream-B/11>

This Event is brought to you for free and open access by the Civil and Environmental Engineering at BYU ScholarsArchive. It has been accepted for inclusion in International Congress on Environmental Modelling and Software by an authorized administrator of BYU ScholarsArchive. For more information, please contact scholarsarchive@byu.edu, ellen_amatangelo@byu.edu.

webXTREME: a simple web tool for calculating agroclimatic indicators of extreme events

Tommy Klein^a, Argyrios Samourkasidis^b, Ioannis N. Athanasiadis^c, Gianni Bellocchi^d,
Pierluigi Calanca^a

^aAgroscope, Institute for Sustainability Sciences, Switzerland
(tommy.klein@agroscope.admin.ch, pierluigi.calanca@agroscope.admin.ch)

^bDemocritus University of Thrace, Greece (argysamo@gmail.com)

^cWageningen University, Netherlands (ioannis@athanasiadis.info)

^dGrassland Ecosystem Research Unit, French National Institute of Agricultural Research
(gianni.bellocchi@clermont.inra.fr)

Abstract: Extreme events such as frost, drought or excessive heat occurring during a critical plant stage can cause extensive and sometimes irreversible damages to agricultural production. Tools for gauging the occurrence of extreme events can thus play an important role in the context of agricultural decision problems. Agroclimatic indicators offer simple means to discriminate between favourable and unfavourable conditions. Their evaluation can be supported by dedicated software tools, even though this typically requires local installation of the proposed solution. Here we present webXTREME, a new web-based tool to characterize the occurrence and intensity of extreme events in agriculture (available through www.modextreme.org/webxtreme, accessed on 6 April, 2016). Objectives, which motivated its development, were: ease of access (available from any internet-connected device), simple setup, universal compatibility (no installation required), extensibility and the possibility to offer regular updating services. webXTREME was designed to help scientists and practitioners with various backgrounds to configure the solving algorithms by taking into account plant-specific thresholds and relevant time windows during the growing seasons of arable crops, grasslands and woody species. Graphical display of the results enables comparative assessments, either in space or in time. webXTREME was implemented using Shiny, an open-source web application framework for R. This allows combining the computational power of dedicated R functions with modern web technologies. webXTREME can easily be integrated into other modelling platforms (e.g. BioMA, <http://bioma.jrc.ec.europa.eu>).

Keywords: extreme events; agroclimatic indicators; R statistical language; Shiny web application framework for R.