

**drought monitoring, prediction and adaptation under climatic changes**

*Su, Z.<sup>1</sup>; Ma, Y.<sup>2</sup>; van der Velde, R.<sup>1</sup>; Dente, L.<sup>1</sup>; Wang, L.<sup>1</sup>; Menenti, M.<sup>3</sup>; Sobrino, J.<sup>4</sup>; Li, Z.-L.<sup>5</sup>; Verhoef, W.<sup>1</sup>; Jia, L.<sup>6</sup>; Wen, J.<sup>7</sup>; He, Y.<sup>8</sup>; Wan, L.<sup>9</sup>; Liu, Q.<sup>10</sup>; Yu, Q.<sup>11</sup>; Li, X.<sup>7</sup>; Zhong, L.<sup>1</sup>; Zeng, Y.<sup>1</sup>; Tian, X.<sup>1</sup>; Li, L.<sup>1</sup>; Qin, C.<sup>1</sup>; Timmermans, W.<sup>1</sup>; van Helvoirt, M.<sup>1</sup>; van der Tol, C.<sup>1</sup>; Salama, S.<sup>1</sup>; Vekerdy, Z.<sup>1</sup>; Timmermans, J.<sup>1</sup>*

*<sup>1</sup>ITC Faculty, University of Twente; <sup>2</sup>Institute of Tibetan Plateau Research (ITP/CAS); <sup>3</sup>TU Delft; <sup>4</sup>Universitat de Valencia; <sup>5</sup>LSIIT, University of Strasbourg; <sup>6</sup>Wageningen University and Research Centre, Alterra; <sup>7</sup>Cold and Arid Regions Environmental and Engineering Research Institute (CAREERI/CAS); <sup>8</sup>National Meteorological Center, Beijing; <sup>9</sup>China University of Geoscience, Beijing; <sup>10</sup>Institute of Remote Sensing Applications, Chinese Academy of Sciences (IRSA/CAS); <sup>11</sup>Institute of Geographical Sciences and Natural Resource Research (IGSNRR/CAS),*

The objective of this project was to develop a quantitative and operational system for nationwide drought monitoring and drought impact assessment for application in agriculture and water resources and environment in China using ESA, Chinese and other relevant satellite data as major data source in combination with other data source (e.g. meteorological and drought statistics, etc.). An extension to drought prediction and adaptation to climate change had been made compared to the Dragon I drought monitoring proposal. In detail the project generated: (1) a preoperational real time drought monitoring and prediction system, (2) improved understanding of land surface processes and land-atmosphere interactions over different terrains (e.g. agriculture land, forest, Gobi desert, high plateau, polar environment), (3) algorithms for estimation of land surface parameters and heat fluxes, (4) assessment of economic loss caused by drought and adaptation measures under climatic change, (5) training of young scientists in the area of water, climate and environment. An Internet based system will be established to provide information concerning the drought evolution situation and to support drought relief decision-making. We report on progresses in retrievals of soil moisture using in-situ observations, satellite sensors and numerical modeling. The accuracy of available soil moisture products are assessed using in-situ data collected in the soil moisture monitoring networks developed for this and other projects. The use of these satellite retrievals in drought monitoring is demonstrated by analyzing the droughts in China and the generated drought assessment indices are compared to current practice by CMA.

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# 全球气候变化背景下的干旱监测、预测与适应对策

Z. Bob Su<sup>1</sup>, 马耀明<sup>2</sup>, R. van der Velde<sup>1</sup>, L. Dente<sup>1</sup>, L. Wang<sup>1</sup>, M. Menenti<sup>3</sup>, J. Sobrino<sup>4</sup>, Z. Li<sup>5</sup>, W. Verhoef<sup>1</sup>, L. Jia<sup>6</sup>, 文军<sup>7</sup>, 何延波<sup>8</sup>, 万力<sup>9</sup>, 柳钦火<sup>10</sup>, 于强<sup>11</sup>, 李新<sup>7</sup>, 仲雷<sup>1</sup>, 曾亦健<sup>1</sup>, 田昕<sup>1</sup>, 李龙辉<sup>1</sup>, 秦昌波<sup>1</sup>, W. Timmermans<sup>1</sup>, M. van Helvoirt<sup>1</sup>, C. van der Tol<sup>1</sup>, S. Salama<sup>1</sup>, Z. Vekerdy<sup>1</sup>, J. Timmermans<sup>1</sup>

1 ITC Faculty, University of Twente

2 中国科学院青藏高原研究所环境变化与地表过程实验室

3 TU Delft

4 Universitat de Valencia

5 LSIT, University of Strasbourg

6 Wageningen University and Research Center, Alterra

7 中国科学院寒区旱区环境与工程研究所

8 国家气象中心

9 中国地质大学

10 中国科学院遥感应用研究所

11 中国科学院地理科学与资源研究所

摘要：该项目的目标是利用欧空局，中国和其他卫星数据作为主要数据源，并与其他数据（如：气象数据和干旱统计数据等）相结合，发展一个具有定量化和可操作性特征的适用于全国的干旱监测系统和干旱影响评估系统，为农业抗旱、水资源合理利用和环境等领域服务。相对于龙计划一期项目，该项目对干旱预测和适应气候变化方面有一定的扩展。具体如下：（1）发展了实时干旱监测和预报系统；（2）增进了对不同下垫面单元陆面过程和陆气相互作用的理解。如农业土地、森林、戈壁沙漠、高原、极地（环境）；（3）改进了地表参数和热通量反演算法；（4）预估受干旱影响所造成的经济损失和适应气候变化的措施；（5）在水利，气候和环境领域培训青年科学家。将发展一个基于因特网的系统提供干旱的演变情况，并支持抗旱救灾决策。项目进展包括利用实测数据、卫星数据和数值模拟获取土壤湿度。利用龙计划项目和相关项目的土壤水分监测网络数据对获取的土壤湿度产品进行精度评估。利用这些卫星反演资料进行干旱监测的结果和中国气象局的相关指标和结果进行了比较，表明其在中国具有良好的可施性。