A Development of Near-Real Time Drought Monitoring System in Ubon Ratchathani, Northeastern Thailand.

（タイ北東部における干ばつの準リアルタイムモニタリングシステムの開発）

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Abstract

At present, food scarcity is critical in many importer countries and also in some producer countries. The key factors are poor cropping system or management and natural disasters. Evidently, the recurring and cumulative damages from drought has caused not only a negative impact to the most important cereal and economic crop – rice in Thailand but also resulted in jobless in agricultural sector and farmer were forced to leave their hometown to pursue the new career in the city. Hence, there is an urgent need to mitigate the drought problems. Reliable information supported to the authorized people for good decision making is crucial for properly handling the situation. In order to acquire such accurate and reliable information, it is important to improve and strengthen an efficient drought monitoring system.

In our development, sensors and equipments for meteorological and soil moisture measurements are installed in 2 districts – Trakan Phutphon and Det Udom, Ubon Ratchathani Province, Northeastern Thailand as near real-time communication systems and accessible via internet. In addition, rainfed rice cropping activities and remote sensing data at Ubon Ratchathani are gathered and analyzed using an agro-hydrological model. The expected outcomes of our study are simulated values of evapotranspiration, soil moisture, leaf area index and so on, which can be applied for drought monitoring and its impact assessment. The simulated parameters will be very useful basis to study in other areas when ground data is not available. The simulated results are however, should be validated before further use.

Key words: Drought**,** Real-time drought monitoring system, Remote sensing, Rainfed-rice, Agro-hydrological model, Ubon Ratchathani

現在、食糧確保は食糧の輸入国、輸出国にとっても重要な問題である。生産性の低さや自然災害などに問題点がある。干ばつが繰り返しおこり、被害が重なると、穀物生産が減るだけではなく、農業従事者の生活も困窮する。そこで、干ばつによっておこる問題の緩和が急務である。よい対策を行うためには、信頼できる情報のサポートが必要である。正確で信頼できる情報を得るために、干ばつモニタリングシステムの改良、強化が必要である。

我々は、気象要素と土壌水分測定のためのセンサ、機器をタイ北東部の Trakan Phutphon と Det Udom, Ubon Ratchathani に導入し、ほぼリアルタイムの通信システムとインターネットを介してデータを取得できるようにした。さらに Ubon Ratchathani では、水稲の収穫量とリモートセンシングデータ、農業-水収支モデルを用いて解析を行った。この研究による期待される成果物は蒸発散量、土壌水分量、LAI(Leaf Area Index) などである。また地上データが存在しない地域に対してもシミュレーションによって得られたデータは、十分な検証を行う必要があるものの、有効に利用されると期待できる。