【动态资讯】

1．Canada in the global water world: A UN analysis of capabilities

【EurekAlert!】Hamilton, Canada - The United Nations University's Canadian-based Institute on Water, Environment and Health today released a critical examination of the capacity of Canada's water sector with respect to meeting and helping other countries meet the water-related targets of the U.N.'s global sustainable development agenda. Several components of this capacity are examined, including water education and research, investment in water projects that Canada makes internally and externally, and experiences in water technology and governance.

链接:

https://www.eurekalert.org/pub_releases/2018-11/tca-cit112318.php

2．US groundwater in peril: Potable supply less than thought

【EurekAlert!】The U.S. groundwater supply is smaller than originally thought, according to a new research study that includes a University of Arizona hydrologist. The study provides important insights into the depths of underground fresh and brackish water in some of the most prominent sedimentary basins across the U.S. The research by scientists from the University of Saskatchewan, the UA and the University of California, Santa Barbara was published Nov. 14 in Environmental Research Letters. "We found that potable groundwater supplies in the U.S. do not go as deep as previously reported, meaning there is less groundwater for human and agricultural uses," said Jennifer McIntosh, a University of Arizona Distinguished Scholar and professor of hydrology and atmospheric sciences. Drilling deeper wells may not be a good long-term solution to compensate for increasing demands

on groundwater.

链接:

3．Scientists reveal substantial water loss in global landlocked regions

【**Kansas State University**】MANHATTAN — Along with a warming climate and intensified human activities, recent water storage in global landlocked basins has undergone a widespread decline. A new study reveals this decline has aggravated local water stress and caused potential sea level rise. The study, "Recent Global Decline in Endorheic Basin Water Storage," was carried out by a team of scientists from six countries and appears in the current issue of Nature Geoscience. "Water resources are extremely limited in the continental hinterlands where streamflow does not reach the ocean. Scientifically, these regions are called endorheic basins," said Jida Wang, a Kansas State University geographer and the study's lead author. "Over the past few decades, we have seen increasing evidence of perturbations to the endorheic water balance," said Wang, an assistant professor of geography. "This includes, for example, the desiccating Aral Sea, the depleting Arabian aquifer and the retreating Eurasian glaciers. This evidence motivated us to ask: Is the total water storage across the global endorheic system, about one-fifth of the continental surface, undergoing a net decline?"

链接:

4．Scientists call for eight steps to increase soil carbon for climate action and food security

【**EurekAlert!**】Leading scientists call for action to increase global soil carbon, in advance of the annual climate summit of the United Nations Framework Convention on Climate Change (UNFCCC) in Katowice, Poland (COP24) and World Soil Day (5 Dec). The amount of carbon in soil is over twice the amount of carbon found in trees and other biomass. But one-third of the world's soils are already degraded, limiting agricultural production and adding almost 500 gigatons of carbon dioxide to the atmosphere, an amount equivalent to the carbon sequestered by 216 billion hectares of U.S. forest. Modalities for climate action in agriculture will be addressed 3 December at the first workshop of the Koronivia Joint Work on Agriculture, a breakthrough initiative of the 2017 UNFCCC climate negotiations. The scientists suggest that the KJWA formally commit to increasing global soil organic carbon

stocks through coordination and activities related to eight steps.

链接:

https://www.eurekalert.org/pub_releases/2018-12/uov-scf113018.php

5．Why Microsoft, Tencent, and Intel are growing cucumbers in autonomous greenhouses

【AgroNews】Researcher teams led by employees at Microsoft, Intel, and Tencent are participating in a cucumber-growing competition to operate autonomous greenhouses to explore artificial intelligence applications in indoor farming. The Autonomous Greenhouse Challenge competition at Wageningen University in the Netherlands started in September and wraps up in December. Alongside corporate tech giants, the project includes a control group of horticulture professionals from the Netherlands who are using methods typically employed in greenhouses today. According to Silke Hemming, the researcher overseeing the competition, as of October 23, Microsoft Research leads in net profit for its greenhouse, followed by Tencent and a team from Wageningen University."The artificial intelligence is now performing better than the human intelligence? This is there in terms of net profit," researcher Isabella Righini told VentureBeat in a phone interview. Teams using AI to drive their decisions created their models using cucumber growing datasets provided by the university.

链接:

http://news.agropages.com/News/NewsDetail---28377.htm

6．辽宁省出台水污染防治条例

【中国农业新闻网】记者从辽宁省人大常委会新闻发布会获悉，《辽宁省水污染防治条例》（以下简称《条例》）即将于2019年2月1日实施。这是辽宁省环境保护的一件大事。近年来，党中央高度重视环境保护工作，特别是习近平生态文明思想的确立，国家有关环境保护的法律法规、方针政策、污染防治理念等都有了很大的变化，辽宁省为应对新挑战、新要求、新目标，结合实际，制定了条例。《条例》出台也是总结提升辽宁省水污染防治工作经验，解决水污染防治现实问题的需要。2015年5月，国务院印发《水污染防治行动计划》，辽宁省及时出台了相关的工作方案。经过几年不懈努力，辽宁省水污染防治工作取得了一些成绩，积累了一些经验，但同时水环境保护的形势依然严峻，水污染防治的任务依然艰巨，迫切需要制定专门地方性法规，用法律手段加快解决水污染防治突出问题。

链接:

http://www.farmer.com.cn/kjpd/nyst/201812/t20181201_1419963.htm

7．农业农村部、生态环境部联合印发土壤环境监测工作方案

【中华人民共和国农业农村部】近日，农业农村部、生态环境部联合印发《国家土壤环境监测网农产品产地土壤环境监测工作方案（试行）》（以下简称《方案》）。《方案》指出，开展农产品产地土壤环境监测，健全全国农产品产地土壤环境监测体系，提升监测预警能力和水平，是强化农产品产地土壤环境监管的有效手段，是落实《土壤污染防治法》《土壤污染防治行动计划》的具体举措，对保障农产品质量安全具有重要意义。《方案》提出，要切实提升农产品产地土壤环境监测能力和水平，及时掌握全国范围及重点区域农产品产地土壤环境总体状况、潜在风险及变化趋势。重点抓好五项工作。一是确定农产品产地土壤环境监测点位。国控监测点覆盖全部产粮大县和主要土壤类型，各省（区、市）可根据实际情况增加布设省控监测点。二是构建农产品产地土壤环境监测工作体系。建立中央、省、市县监测工作体系，上下联动，明确责任，保证监测工作长效稳定开展。三是开展农产品产地土壤环境例行监测。省级农业农村部门每年定期组织开展监测工作，采集检测土壤样品和农产品样品，建立例行监测制度。四是加强农产品产地土壤环境监测成果总结。建立国家农产品产地土壤环境监测样品库，各地可根据需要建立符合技术规范的省级样品库。各级农业农村部门要汇总审核分析监测数据，形成农产品产地土壤环境状况年度专题报告。五是发布土壤环境状况信息。生态环境部会同农业农村部统一发布土壤环境状况信息。

链接：

http://www.moa.gov.cn/xw/zwdt/201811/t20181119_6163266.htm

8．七省市将提前一年完成"十三五"畜禽粪污资源化利用目标

【中华人民共和国农业农村部】11月23日，农业农村部与北京、天津、上海、江苏、浙江、福建、山东7个省（市）人民政府签署《畜禽粪污资源化利用整省推进合作协议》，通过部省（市）联动，探索整省推进畜禽粪污资源化利用的有效机制和模式，把7个省（市）打造成畜禽粪污资源化利用的标杆样板，为其他地区做表率，示范带动各地加快推进畜禽粪污资源化利用。7个省（市）共同发布了《畜禽粪污资源化利用整省推进联合宣言》，承诺确保提前一年完成国家"十三五"畜禽粪污资源化利用目标。签署合作协议和发布联合宣言是农业农村部和7个省（市）贯彻习近平总书记重要讲话精神，落实党中央、国务院推进农业绿色发展，改善农村人居环境决策部署的具体行动和重大举措。根据合作协议，农业农村部将加大对7个省（市）的政策支持力度，以畜牧大县为重点，支持畜禽粪污处理和资源化利用设施建设，加强技术指导，总结推广典型经验模式，推动构建种养结合机制。

链接：

http://www.moa.gov.cn/xw/zwdt/201811/t20181123_6163559.htm

9．全面推进资源化利用 加快改善农村人居环境

【中华人民共和国农业农村部】全国畜禽养殖废弃物资源化利用现场会23日在福建漳州召开，中共中央政治局委员、国务院副总理胡春华出席会议并讲话。他强调，加快推进畜禽养殖废弃物资源化利用是改善农村人居环境的重要任务，要深入贯彻习近平总书记的重要指示精神，按照党中央、国务院决策部署，坚持政府支持、企业主体、市场化运作的方针，坚持源头减量、过程控制、末端利用的治理路径，全面推进畜禽养殖废弃物资源化利用，加快构建种养结合、农牧循环的可持续发展新格局，为促进乡村全面振兴提供有力支撑。胡春华指出，推进畜禽养殖废弃物资源化利用是有明确时限要求的硬任务，必须加大工作力度，确保如期完成。要大力推动畜禽清洁养殖，加强标准化精细化管理，促进废弃物源头减量。要打通有机肥还田渠道，增强农村沼气和生物天然气市场竞争力，加快培育发展畜禽养殖废弃物资源化利用产业。要严格落实畜禽规模养殖环评制度，强化污染监管，落实养殖场主体责任，倒逼畜禽养殖废弃物资源化利用。要加大政策支持保障力度，创造良好市场环境，帮助企业形成可持续的商业模式和盈利模式。

链接:

http://www.moa.gov.cn/xw/zwdt/201811/t20181124_6163579.htm

10．西北地区深入推进农膜回收行动

【中华人民共和国农业农村部】记者从农业农村部获悉，农业农村部启动农膜回收行动以来，各级农业农村部门积极响应，认真落实，构建了国家、省、县三级工作推进组，创建了100个地膜回收示范县、4个地膜生产者责任延伸试点县，培育壮大了地膜回收第三方主体，加大了降解地膜试验示范和残膜机械回收研发力度、对接了产业技术体系，完善了地膜残留监测网络，强化了地膜回收监督考核，有力推动了农膜回收工作。 目前，内蒙古、新疆、甘肃3省（区）100个地膜回收示范县面积已达5500多万亩。2017年甘肃省回收废旧地膜13.6万吨，回收利用率达80.1%，从事废旧农膜回收加工的各类企业已达224家；新疆40个覆膜大县已接近80%，建成86个废旧地膜回收加工厂、475个废旧农膜回收站。在回收机制上，积极探索生产者责任延伸机制，在4个县开展试点，明确了定点企业，签订任务合同，由企业统一供膜、统一回收。在回收模式上，试点县积极推广"交旧领新""废旧农膜兑换超市"等模式。在监督管理上，推动出台了地膜新国标，将劣质不达标地膜列入农资打假范畴，加大执法检查力度。在科技支撑上，成立了以农膜回收为主的国家农业废弃物循环利用创新联盟，针对人工捡拾效率低、秸秆地膜分离难等问题，相继开发出一批残膜捡拾机、秸秆还田及残膜回收联合作业机等新机型，实现废旧农膜高效捡拾和专业化回收。

链接:

http://www.moa.gov.cn/xw/zwdt/201811/t20181127_6163791.htm

1．Land degradation and poverty

作者：Edward B. Barbier; Jacob P. Hochard

文献源：Nature Sustainability,2018

摘要：Land is one of the few productive assets owned by the rural poor, and almost all such households engage in some form of agriculture. Over 2000—2010 the rural poor on degrading agricultural land increased in low-income countries and in sub-Saharan Africa and South Asia. Although degradation threatens the livelihoods of the poor, this interaction is complex and conditioned by key economic, social and environmental factors. These factors also limit the poverty-reducing impacts of economic growth and economy-wide reforms. A comprehensive development strategy requires investments that improve the livelihoods of affected populations and regions, and facilitates outmigration in severely impacted areas.

链接:

http://agri.ckcest.cn/file1/M00/02/9E/Csgk0FwHLEWAGyKJABRSHqamMTs270.pdf

2．Agriculture, climate change and sustainability: The case of EU-28

作者：Massimiliano Agovino; Mariaconcetta Casaccia; Mariateresa Ciommi, et al.

文献源：Ecological Indicators,2018

摘要：Agriculture and climate change are characterized by a complex cause-effect relationship. The agricultural sector generates significant quantities of gas emissions that affect climate. The rise in the concentration of greenhouse gases in the atmosphere, the increase in temperatures as well as changes in the precipitation regime have repercussions on the volume, quality and stability of the agricultural and zoo technical production, but also on the natural environment in which agriculture is practiced. Based on the above, the purpose of the paper is twofold. Firstly, through the Wroclaw Taxonomic Method, we construct a composite indicator, called the Index of Sustainable Agriculture (ISA), and analyse 28 countries that have joined the European Union from 1 July 2013 to today (EU-28) over the period 2005—2014, according to 16 variables. Secondly, the Granger-causality test for panel data is implemented in order to verify the causal relationship among the ISA, climate change and agricultural production. In other words, we test which of the three analyzed variables turns out to be the cause variable and which, instead, turns out to be the effect variable. Furthermore, we test if there is a bidirectional causality among the variables. This analysis provides a wide overview on how European countries rank according to the ISA and its three crucial pillars, i.e. environmental, economic and social. Moreover, important

causality relationships among the ISA, climate changes (approximated by mean annual temperature and mean annual precipitation and provided by the Climate Research Unit (CRU) Time-Series (TS) Version 3.22 of the University of East Anglia) and agricultural production (approximated by wheat and spelt yields and provided by EUROSTAT) are identified. In particular, the following hypotheses are verified: 1) there is a negative bidirectional relationship between climate change and agricultural yields; 2) there is a negative bidirectional causal relationship between climate change and sustainable agriculture; 3) conventional agriculture negatively affects sustainable agriculture.

链接:

http://agri.ckcest.cn/file1/M00/00/00/Csgk0VwHK8KATuAWAGCzZSzCPE8019.pdf

3．Agricultural plastic waste mapping using GIS. A case study in Italy

作者：Ileana Blanco; Rosa Viviana Loisi; Carmela Sica, et al.

文献源：Resources, Conservation & Recycling,2018

摘要：Plastic materials used in agriculture mostly derive from synthetic petro-chemical polymers. They require at the end of their lifetime a suitable waste management system for the collection and treatment. A research was carried out in order to define a GIS methodology for mapping the agricultural plastic waste on the land. The use in agriculture of plastics in Barletta-Andria-Trani Province Apulia Region was investigated by applying orthophotos analysis and remote sensing survey. Besides purposed Plastic Waste Indexes were created to release land use to waste generation. The data were organized in a specific geo-database. The analysis showed that the agricultural plastic waste yearly produced from covering films was 627 kg ha^{-1}, from the anti-hail nets was 159 kg ha^{-1}, from nets for crop protection was 192 kg ha^{-1}, from shading nets was 131 kg ha^{-1}, from irrigation pipes was 104 kg ha^{-1}. Through GIS, the areas with high density of plastic wastes were pointed out and the suitable location of collection centres was defined. The produced maps and the GIS database can be always updatable tools, useful for monitoring and optimizing the collection of agricultural plastic waste from the farms and their transport to the recycling companies.

链接:

http://agri.ckcest.cn/file1/M00/02/9E/Csgk0FwHKkCAG8hKANemHN36ZXc154.pdf

4．Quantitative assessment of soil saline degradation using remote sensing indices in Siwa Oasis

作者：Mohamed A.E. AbdelRahman; Mohamed M. Metwaly; Adel Shalaby

文献源：Remote Sensing Applications: Society and Environment,2018

摘要：Unsuitable practices and improper land management lead to soil degradation and therefore deviates land from optimum productivity. Remote sensing indices and spatial variability of soil properties were implemented in Arc GIS model-Builder for quantitative assessment of land degradation in Siwa Oasis, western desert, Egypt. Semivariogram model through Kriging techniques was used to produce maps of soil properties in two dates 2002 and 2017. This was done in order to calculate soil degradation rates and its areas in the studied area. The results indicated that geostatistical approach and ArcGIS model-builder can directly reveal the spatial variability of soil properties and measure accurately the changes in soil properties. The results will help the farmers and decision makers for improving the soil-water management. The cross-validation results illustrated the smoothing effect of the spatial prediction. Physical and chemical properties of 90 soil profiles were analyzed and chemical parameters were analyzed of 30 groundwater sample, collected from irrigation-wells. Landsat images of five different periods were collected to monitor the changes of the surface features of soil salinity and water logging. Soil analyses show a wide variability. The very saline, non-sodic soils cover most of the suited soils. Agricultural areas, saline soils and water logged areas were increased. The increment of saline soil and water logged areas is associated with poor drainage and increment in crop irrigation. There is degradation in groundwater quality which indicated by its salinity. The studied soils are salt-affected and this prompts the need of a proper land reclamation program and prods the development of effective irrigation and drainage systems.

链接:

http://agri.ckcest.cn/file1/M00/00/00/Csgk0VwHKaCAZ0IoADBFon0uxYo764.pdf

5．Carbon uptake by European agricultural land is variable, and in many regions could be increased: Evidence from remote sensing, yield statistics and models of potential productivity

作者：Mathias Neumann; Pete Smith

文献源：Science of the Total Environment,2018

摘要：Agricultural plants, covering large parts of the global land surface and important for the livelihoods of people worldwide, fix carbon dioxide seasonally via photosynthesis. The

carbon allocation of crops, however, remains relatively understudied compared to, for example, forests. For comprehensive consistent resource assessments or climate change impact studies large-scale reliable vegetation information is needed. Here, we demonstrate how robust data on carbon uptake in croplands can be obtained by combining multiple sources to enhance the reliability of estimates. Using yield statistics, a remote-sensing based productivity algorithm and climate-sensitive potential productivity, we mapped the potential to increase crop productivity and compared consistent carbon uptake information of agricultural land with forests. The productivity gap in Europe is higher in Eastern and Southern than in Central-Western countries. At continental scale, European agriculture shows a greater carbon uptake in harvestable compartments than forests (agriculture 1.96 vs. forests 1.76 t C ha^{-1} year^{-1}). Mapping productivity gaps allows efforts to enhance crop production to be prioritized by, for example, improved crop cultivars, nutrient management or pest control. The concepts and methods for quantifying carbon uptake used in this study are applicable worldwide and allow forests and agriculture to be included in future carbon uptake assessments.

链接**:**

http://agri.ckcest.cn/file1/M00/02/9E/Csgk0FwHKSuAQDsOAC2dYdwgueI892.pdf

6．Partitioning of evapotranspiration in remote sensing-based models

作者：Carl J. Talsma; Stephen P. Good; Carlos Jimenez, et al.

文献源：Agricultural and Forest Meteorology,2018

摘要：Satellite based retrievals of evapotranspiration (ET) are widely used for assessments of global and regional scale surface fluxes. However, the partitioning of the estimated ET between soil evaporation, transpiration, and canopy interception regularly shows strong divergence between models, and to date, remains largely unvalidated. To examine this problem, this paper considers three algorithms: the Penman-Monteith model from the Moderate Resolution Imaging Spectroradiometer (PM-MODIS), the Priestley-Taylor Jet Propulsion Laboratory model (PTJPL), and the Global Land Evaporation Amsterdam Model (GLEAM). Surface flux estimates from these three models, obtained via the WACMOS-ET initiative, are compared against a comprehensive collection of field studies, spanning a wide range of climates and land cover types. Overall, we find errors between estimates of field and remote sensing-based soil evaporation (RMSD = 90-114%, r^2 = 0.14-0.25, N = 35), interception (RMSD = 62-181%, r^2 = 0.39-0.85, N = 13), and transpiration (RMSD = 54-114%,

r^2 = 0.33-0.55, N = 35) are relatively large compared to the combined estimates of total ET (RMSD = 35-49%, r^2 = 0.61-0.75, N = 35). Errors in modeled ET components are compared between land cover types, field methods, and precipitation regimes. Modeled estimates of soil evaporation were found to have significant deviations from observed values across all three models, while the characterization of vegetation effects also influences errors in all three components. Improvements in these estimates, and other satellite based partitioning estimates are likely to lead to better understanding of the movement of water through the soil-plant-water continuum.

链接:

http://agri.ckcest.cn/file1/M00/00/00/Csgk0VwHJtyAbDSzAB7f8x4k5Og182.pdf

7．Monitoring crop phenology using a smartphone based near-surface remote sensing approach

作者：Koen Hufkens; Eli K. Melaas; Michael L. Mann, et al.

文献源：Agricultural and Forest Meteorology,2018

摘要：Smallholder farmers play a critical role in supporting food security in developing countries. Monitoring crop phenology and disturbances to crop growth is critical in strengthening farmers' ability to manage production risks. This study assesses the feasibility of using crowdsourced near-surface remote sensing imagery to monitor winter wheat phenology and identify damage events in northwest India. In particular, we demonstrate how streams of pictures of individual smallholder fields, taken using inexpensive smartphones, can be used to quantify important phenological stages in agricultural crops, specifically the wheat heading phase and how it can be used to detect lodging events, a major cause of crop damage globally. Near-surface remote sensing offers granular visual field data, providing detailed information on the timing of key developmental phases of winter wheat and crop growth disturbances that are not registered by common satellite remote sensing vegetation indices or national crop cut surveys. This illustrates the potential of near-surface remote sensing as a scalable platform for collecting high-resolution plot-specific data that can be used in supporting crop modeling, extension and insurance schemes to increase resilience to production risk and enhance food security in smallholder agricultural systems.

链接:

http://agri.ckcest.cn/file1/M00/02/9E/Csgk0FwHJRqADeAgAFMk7SrAo4w036.pdf

8．A tree-based approach to biomass estimation from remote sensing data in a tropical agricultural landscape

作者：Sarah J. Graves; T. Trevor Caughlin; Gregory P. Asner, et al.

文献源：Remote Sensing of Environment,2018

摘要：Agricultural land now exceeds forests as the dominant global biome. Because of their global dominance, and potential expansion or loss, methods to estimate biomass and carbon in agricultural areas are necessary for monitoring global terrestrial carbon stocks and predicting carbon dynamics. Agricultural areas in the tropics have substantial tree cover and associated above ground biomass (AGB) and carbon. Active remote sensing data, such as airborne LiDAR (light detection and ranging), can provide accurate estimates of biomass stocks, but common plot-based methods may not be suitable for agricultural areas with dispersed and heterogeneous tree cover. The objectives of this research are to quantify AGB of a tropical agricultural landscape using a tree-based method that directly incorporates the size of individual trees, and to understand how landscape estimates of AGB from a tree-based method compare to estimates from a plot-based method. We use high-resolution (1.12 m) airborne LiDAR data collected on a 9280-ha region of the Azuero Peninsula of Panama. We model individual tree AGB with canopy dimensions from the LiDAR data. We apply the model to individual tree crown polygons and aggregate AGB estimates to compare with previously developed plot-based estimates. We find that agricultural trees are a distinct and dominant part of our study site. The tree-based approach estimates greater AGB in pixels with low forest cover than the plot-based approach, resulting a 2-fold difference in landscape AGB estimates between the methods for non-forested areas. Additionally, one third of the total landscape AGB exists in areas having < 10% cover, based on a global tree cover product. Our study supports the continued use and development of allometric models to predict individual tree biomass from LiDAR-derived canopy dimensions and demonstrates the potential for spatial information from high-resolution data, such as relative isolation of canopies, to improve allometric models.

链接**:**

http://agri.ckcest.cn/file1/M00/00/00/Csgk0VwHJDSAJPddADVslswG_YI906.pdf

9．Integrated remote sensing approach to global agricultural drought monitoring

作者：Nilda Sánchez; Ángel González-Zamora; José Martínez-Fernández, et al.

文献源：Agricultural and Forest Meteorology,2018

摘要：This study explores the use of the Soil Moisture Agricultural Drought Index (SMADI) as a global estimator of agricultural drought. Previous research presented SMADI as a novel index based on the joint use of remotely sensed datasets of land surface temperature (LST) and normalized difference vegetation index (NDVI) from the Moderate Resolution Imaging Spectroradiometer (MODIS) together with the surface soil moisture (SSM) from the Soil Moisture and Ocean Salinity (SMOS) mission. This study presents the results of applying SMADI at the global scale with a spatial resolution of 0.05° every 15 days. The period of the study spanned from 2010 to 2015. Three spatial scales (local, regional and global) were used to compare the agricultural drought events captured by SMADI against existing agricultural drought indices, as well as reported occurrences of drought events from dedicated databases. Results show that SMADI had good consistency with two agricultural indices in the center of the Iberian Peninsula at the local and regional scales, depicting 2012 and 2014 as the driest years in the area. A comparison of SMADI across the United States of America with the impact and intensity maps of drought from the US Drought Monitor (USDM) revealed a reasonable match with the temporal and spatial extent of the affected areas, detecting the most intense drought events. Finally, a comparison at the global scale with documented events of drought world-wide showed that SMADI was able to recognize more than 80% of these events for more than 50% of their duration. The calculation of the SMADI is simple and fast, and it relies on data that are readily available, thereby providing a rapid overview of drought-prone conditions that could enhance the present capabilities of early warning systems.

链接:

http://agri.ckcest.cn/file1/M00/02/9E/Csgk0FwHI66AIhEnAFqqSfZrwc0725.pdf

10．UAV-based multispectral remote sensing for precision agriculture: A comparison between different cameras

作者：Lei Deng; Zhihui Mao; Xiaojuan Li; et al.

文献源：ISPRS Journal of Photogrammetry and Remote Sensing,2018

摘要：Unmanned aerial vehicle (UAV)-based multispectral remote sensing has shown great potential for precision agriculture. However, there are many problems in data acquisition,

processing and application, which have stunted its development. In this study, a narrowband Mini-MCA6 multispectral camera and a sunshine-sensor-equipped broadband Sequoia multispectral camera were mounted on a multirotor micro-UAV. They were used to simultaneously collect multispectral imagery and soil-plant analysis development (SPAD) values of maize at multiple sampling points in the field, in addition to the spectral reflectances of six standard diffuse reflectance panels with different reflectance values (4.5%, 20%, 30%, 40%, 60% and 65%). The accuracies of the reflectance and vegetation indices (VIs) derived from the imagery were compared, and the effectiveness and accuracy of the SPAD prediction from the normalized difference vegetation index (NDVI) and red-edge NDVI (reNDVI) under different nitrogen treatments were examined at the plot level. The results show that the narrowband Mini-MCA6 camera could produce more accurate reflectance values than the broadband Sequoia camera, but only if the appropriate calibration method (the nonlinear subband empirical line method) was adopted, especially in visible (blue, green and red) bands. However, the accuracy of the VIs was not completely dependent on the accuracy of the reflectance, i.e., the NDVI from Mini-MCA6 was slightly better than that from Sequoia, whereas Sequoia produced more accurate reNDVI than did Mini-MCA6. At the plot level, reNDVI performed better than NDVI in SPAD prediction regardless of which camera was employed. Moreover, the reNDVI had relatively low sensitivity to the vegetation coverage and was insignificantly affected by environmental factors (e.g., exposed sandy soil). This study indicates that UAV multispectral remote sensing technology is instructive for precision agriculture, but more effort is needed regarding calibration methods for vegetation, postprocessing techniques and robust quantitative studies.

链接:

http://agri.ckcest.cn/file1/M00/00/00/Csgk0VwHIwiAW-txADLIUW7yF3I460.pdf

【科技图书】

1．Chapter 7 - Agricultural Remote Sensing and Data Science in China

发布源：Federal Data Science

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摘要：Data science and big data have been booming in the past 5 years in China. Remote sensing is one of the most important fields using big data. Agriculture is one of the most important and popular fields of remote sensing applications and data science. In the past decade, there have been rapid developments in agricultural remote sensing and data

science, in China and all over the world. In this chapter, the research and applications in remote sensing for agriculture and data science in China are reviewed. Substantial progress in agricultural quantitative remote sensing inversion of crop and environmental parameters has been made. Remote sensing applications in cropland classification and crop mapping, crop growth monitoring, and crop yield estimation are widely presented. The operational China's agriculture remote sensing monitoring system is presented as an example to showcase remote sensing applications in agriculture. The second part of the chapter briefly describes the development of data science in China and the status quo of big data applications. Some examples of data science resource sharing and service platforms are also presented.

链接:

https://www.sciencedirect.com/science/article/pii/B9780128124437000077