Citation: Xia, Y. L., Z. C. Hao, C. X. Shi, et al., 2019: Regional and Global Land Data Assimilation Systems: Innovations, Challenges, and Prospects. *J. Meteor. Res.*, **33**(2): 159-189. doi: 10.1007/s13351-019-8172-4.

英文题目：Regional and Global Land Data Assimilation Systems: Innovations, Challenges, And Prospects

作者：XIA Youlong, HAO Zengchao*, SHI Chunxiang, LI Yaohui, et al.

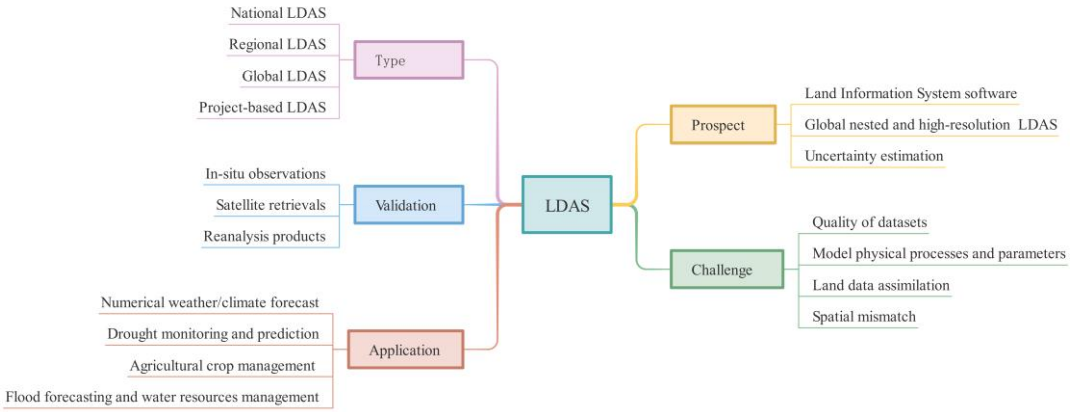
英文摘要：Since the North American and Global Land Data Assimilation Systems (NLDAS and GLDAS) were established in 2004, the development of regional and global LDASs has made significant progress. National, regional, project based, and global LDASs are widely developed worldwide. This study summarizes and overviews the development, current status, challenges, and future prospects of these LDASs. It should be noted that this review focuses on uncoupled LDASs without specific comparison and analysis about various LDASs' performance (e.g., strengths and weaknesses). We first introduce regional and global LDASs, including their history and development, and then discuss the evaluation, validation, and application (from numerical model prediction to water resources management) of various LDASs. More importantly, we detail the challenges of LDASs including but not limited to the quality of in-situ observations, satellite retrievals, reanalysis data, and soil and vegetation datasets, land surface model physical processes and parameters, land data assimilation, and spatial incomparability problems. Finally, some prospects such as the use of land information system software, unified global LDAS system with nesting concept and hyper-resolution, and uncertainty estimates are discussed.

中文题目：区域和全球陆面数据同化系统：创新、挑战与前景

作者：夏有龙，郝增超*，师春香，李耀辉 等

自 2004 年北美和全球陆面数据同化系统(NLDAS 和 GLDAS)建立以来，区域和全球 LDAS 发展取得了重大进展。本研究总结了国家、区域、项目和全球 LDAS 的发展现状、挑战和未来前景。我们首先概要阐述了区域和全球 LDAS 的发展历程，然后介绍了不同 LDAS 的评估、验证和应用(从数值模型预测到水资源管理)，并探讨了 LDAS 面临的挑战，包括现场观测、遥感反演、再分析数据以及土壤和植被数据集的质量，陆面模型的物理过程和参数，以及空间不可比性等问题。最后，本文讨论了陆面信息系统软件的使用、超分辨率全球尺度嵌套式陆面数据同化系统的发展以及不确定性估计等发展前景。

英文思维导图：



中文思维导图：