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Justine Blanford has accumulated considerable, and considerably varied research experiences in her 15+ years as an active researcher and educator. She uses GIS, big datasets and a variety of geospatial computational and analysis methods to address applied research questions across a range of topics as diverse as sinkholes and sky islands, tornadoes and turtles, and malaria and migration, among others. At its core, however, her research has focused on broad issues related to human health, particularly in relation to climate and climate change, examining causes and consequences at local and all the way through to global spatial and temporal scales.

As the quantity and availability of geospatially enabled data continues to increase dramatically, so do the concomitant challenges and opportunities associated with the appropriate gathering, analyzing and dissemination of the findings from these data. Spatial data science clearly plays a central role in addressing many real-world problems and from an educational perspective, Blanford is interested in expanding and strengthening Spatial Data Science education and also building scholarly communities and networks to foster multi-disciplinary Spatial Data Science research and education. As an academic who currently teaches in an online program geared towards working professionals, and who has also worked outside of academia, she fully appreciates the many levels of education needed to help students and professionals develop skill sets that enable them to excel within the realm of the Spatial Data Sciences across a wide range of disciplines and industries.

Blanford is currently at the Pennsylvania State University where she is faculty in the Department of Geography and on the board of directors at the UCGIS. She brings with her a varied background having lived and worked in different parts of the world and in diverse cultures. She has a PhD in Biology from Imperial College, UK. Prior to coming to Penn State she was a Senior GIS Developer and Analyst with the Scottish Environment Protection Agency.

Spatial Data Science: Staying Relevant in the Digital Age

By its very nature spatial data science is interdisciplinary, central to everything we do and everything with which we interact. The availability of new devices allows data to be collected easily alongside point-of-care diagnostics at a precise location in time. Through these data collection avenues we are able to provide richer and more diverse sources of information about us and the environments in which we live than ever before. However, although we have moved into an exciting

era of digital exploration there remains many challenges in using, analyzing, integrating and applying these data.

Due to this abundance of data we have essentially seen a convergence of disciplines where all disciplines are moving in the direction that computational geography did about 20 years ago hoping new computational methods and big datasets will provide new and deeper insights into particular topics of investigation. Spatial data is a central and important part of this. We should then, be focusing on how to make spatial data science more visible and more accessible so that it is considered an integral part of not only data science curricula and communities but is also a part of all disciplines. We, as spatial data scientists, have much to offer that range from data collection, management, integration, exploration and analysis to visualization.

If we are to define an agenda for spatial data science for the next 10 years we will need to address one of our biggest challenges of how we can position ourselves to become a science that is integrated across all disciplines since geospatial technologies are now widely used to help us do our research, jobs, navigate and in general understand the world around us. From an educational perspective we need to think of what skills are required for spatial data sciences so that relevant curricula can be developed. Essentially what are the fundamental core skills that are required and also what skillsets are missing beyond what is just spatial? If we are to provide guidance outside of the spatial data sciences we will also need to identify what fundamental skillsets and spatial concepts are needed for novel or adhoc users so that we can provide support to users not familiar with the terminology and methods of the spatial data sciences. In doing so we should also be able to address some of the challenges related to the development and use of spatial data and methods such as privacy and ethics of using these data; the creation, collection and availability of these data and methods as well as the reliability, accuracy, reproducibility and certainty of outputs from using these data and methods.

If we are to think about spatial data science as a unified field we should think of what we want this field to represent. To do so we first need to define what spatial data science is, what it will represent and how it compliments or differs (if it does) from data science. We as GIScientists or Spatial Data Scientists have much to offer with skills and knowledge ranging from managing data, to analyzing/modeling data, and in what context, as well as creating a coherent story about what the data is telling us. We need to lead the way so that we are interdisciplinary and central in this move forward.