

SCI-WMS:Python based Web Mapping Service for Visualizing Geospatial Data

Brandon A. Mayer^{1,2}, Brian McKenna², Alex Crosby³ and Kelly Knee²

Abstract SCI-WMS is an open-source python implementation of an OGC WMS [1] service for qualitatively assessing society-critical atmospheric and oceanographic applications including: forecasting, risk assessment, model comparison and algorithmic/parameter selection. The modular cross-platform implementation of SCI-WMS allows the service to keep pace with the rapid developments in the geospatial data science community and to produce visualizations for numerous types of model outputs with transparent support for both structured and unstructured geo-referenced topologies. This article outlines the implementation and technology stack for visualizing geospatial Climatological and Forecasting (CF) data using SCI-WMS¹ and details the deployment of SCI-WMS for visualizing model data and simulations within the scope of the U.S. IOOS Coastal and Ocean Modeling Testbed project [2].

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¹ <https://github.com/asascience-open/sci-wms>

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$$a \times b = c, \quad (1)$$

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$$\begin{aligned} a \times b &= c \\ \mathbf{a} \cdot \mathbf{b} &= \mathbf{c} \end{aligned} \quad (2)$$

2.1 Subsection Heading

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² In physics texts please activate the class option `vecphys` to depict your vectors in ***boldface-italic*** type - as is customary for a wide range of physical subjects

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1. Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.
 - a. Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.
 - b. Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.
2. Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.

Subparagraph Heading

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- Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development, cf. Table 1.
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- Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.

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Run-in Heading Italic Version Use the \LaTeX automatism for all your cross-references and citations as has already been described in Sect. 2.

Table 1 Please write your table caption here

Classes	Subclass	Length	Action Mechanism
Translation	mRNA ^a	22 (19–25)	Translation repression, mRNA cleavage
Translation	mRNA cleavage	21	mRNA cleavage
Translation	mRNA	21–22	mRNA cleavage
Translation	mRNA	24–26	Histone and DNA Modification

^a Table foot note (with superscript)

3 Section Heading

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- Type 1That addresses central themes pertainng to migration, health, and disease. In Sect. 1, Wilson discusses the role of human migration in infectious disease distributions and patterns.
- Type 2That addresses central themes pertainng to migration, health, and disease. In Sect. 2.1, Wilson discusses the role of human migration in infectious disease distributions and patterns.

3.1 Subsection Heading

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Theorem 1. *Theorem text goes here.*

Definition 1. Definition text goes here.

Proof. Proof text goes here. \square

Paragraph Heading

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Theorem 2. *Theorem text goes here.*

Definition 2. Definition text goes here.

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Appendix

When placed at the end of a chapter or contribution (as opposed to at the end of the book), the numbering of tables, figures, and equations in the appendix section continues on from that in the main text. Hence please *do not* use the `appendix` command when writing an appendix at the end of your chapter or contribution. If there is only one the appendix is designated “Appendix”, or “Appendix 1”, or “Appendix 2”, etc. if there is more than one.

$$a \times b = c \tag{3}$$

References

1. Open Geospatial Consortium <http://www.opengeospatial.org/standards/wms> [Accessed: 2014-07-24], “OpenGIS Web Map Service.”
2. R. A. Luettich, L. D. Wright, R. Signell, C. Friedrichs, M. Friedrichs, J. Harding, K. Fennel, E. Howlett, S. Graves, E. Smith, G. Crane, and R. Baltes, “Introduction to special section on the U.S. IOOS Coastal and Ocean Modeling Testbed,” *Journal of Geophysical Research: Oceans*, vol. 118, no. 12, pp. 6319–6328, 2013.