



METEOR Metadata Overview Transcript

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Hello and welcome to this section of the METEOR video series.

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In this video we will be giving a brief overview of Exposure Metadata.

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And, by the end of this short video we hope to answer the basic questions of: What is the purpose of the metadata? How is the metadata content derived? And what format is the metadata stored in?

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First, let's briefly discuss the purpose of the exposure metadata. The metadata allows us to answer questions like: What is the spatial resolution of this exposure data? How can I access the source of this data? How was the replacement cost of this exposure data determined? How recently was this data produced? (or the data vintage). And why is this point in the river? Or, in other words, an explanation of any processing steps or limitations that may have introduced uncertainty in position or uncertainty in other aspects of the data.

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What we want to achieve is metadata that communicates a language for the science of exposure development. It illuminates the process of creating the data, allowing us to develop robust methods of representing exposure assumptions with respect to vintage, progeny, resolution, and limitations - particularly when fusing multiple datasets collected over a considerable period of time. And it allows us to acknowledge the uncertainty, by establishing methods of characterizing the uncertainty of exposure datasets through the incorporation of modelling techniques. It is particularly important that end users understand uncertainties in key factors such as location, the taxonomy, and replacement cost before they use data.

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In order to capture this type of information, flowcharts are provided that can be used to guide in the creation of the documentation. The flowcharts prompt the author to consider the relevant sources and decisions that have gone into each aspect of exposure dataset development. This flowchart is an example of how we would capture details about the work that was done to develop the Replacement Cost data for a given country.

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Different levels of exposure data require different processes and decisions during creation. This means that every exposure data level will need a separate set of flowcharts to capture aspects of the data that are unique to that level. In order to document these, different sets of flowcharts have been provided to work through the documentation, depending on which level is being created. On the left we see an



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example of the Population flowchart for a Level 1 exposure dataset. On the right, a Location Precision flowchart for a Level 5 exposure dataset. When an author is ready to begin the documentation process, they will select the appropriate set of flowcharts based on the type of data that they are working with.

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Once that information is captured, we need a suitable way to distribute it to the end users. The flowcharts described in the previous section are just a way to collect information that will go into an actual metadata storage format. For actual metadata storage, we have chosen the ISO-19139 metadata format, which was developed to store a wide variety of geographic metadata. Supplementing that file is the ISO-19110 format, which stores metadata about specific data fields. This standard is created by ISO, the International Organization for Standardization. It's a standard that is currently compatible with many GIS tools, and compatibility is expected to grow as time goes on, since the standard has recently reached a mature state. This metadata is delivered as a set of XML files that accompany each dataset. Please also note that our recommendation is currently to use the ISO-19139 version that has been in place since 2007. While there is a recent update to this format, it is not yet fully supported by many major GIS softwares, making the previous version more widely suitable at the moment. As more software adopts the latest update to the standard, this recommendation will be updated to reflect that.

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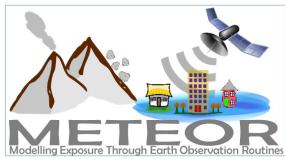
This shows the result of taking the flowchart that we looked at previously, and translating it into a section in the actual metadata XML file. The section of metadata in the upper left corner describes how replacement cost was determined for this country, including sources and references. As you can see, it's written in paragraph form as it's meant to be easily referenced by the users of the exposure data.

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When creating the metadata documents, our current recommendation is to use the ArcCatalog tool within ArcGIS. This is currently the most straightforward way to capture all of the relevant information and export it into the formats that we have discussed. ArcCatalog can write directly to the ISO-19139 format. An additional benefit is that the metadata can be simultaneously stored in the ESRI ArcGIS format. By providing both formats, the author may have the greatest chance of reaching the widest audience with the metadata.

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Now that we have looked at the purpose, content, and format of the metadata, let's quickly review - What useful things can you find in the metadata? First we have: Mapping Scheme and Development Pattern definitions. These are full descriptions of the mapping schemes and development patterns that were used when generating the structural distribution. For users that need to delve into this, there is quite a bit of explanation contained here. Next is: Detailed country-specific source data and references. The metadata has a bibliography of the input data that was used for



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each country, so you can determine where to find sources and any other relevant material. Next, we have: Detailed country-specific processing steps. As you saw from the flowchart earlier, we've captured detailed information about how each piece of data was created, and put these into an easily readable format. The snippet shown here is an example of how the Population Data was generated for a country, including relevant sources. Next is: Replacement Cost information. Like I mentioned, this gives an explanation of how the replacement cost was determined, and includes specifics about replacement costs for the different development patterns. And beyond that, we have more standard information that might be useful, such as easily understandable descriptions of the different data fields, limitations on how the data can meaningfully be applied, and contact information to get in touch with the team for any other questions.

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I hope you now have a good overview of exposure metadata documentation, and thank you for watching.