

Geospatial Learning Pathways Presentation

Soil Data Viewer

by

Josh Sorlie, BLM Malta Field Office

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This is a Bureau of Land Management Geo Spatial Learning Pathways presentation. Soil Data Viewer is presented by the Montana State Office. This presentation demonstrates basic functionality found within the Soil Data Viewer toolbar and access within the Citrix server environment. Your presenter is Josh Sorlie of BLM's Malta Field Office.

Soil Data Viewer is an extension to ArcMap that allows a user to create soil-based thematic maps. The application can also be run independent of ArcMap but output is limited and it's limited to just a tabular report.

Soil survey attribute database that's part of what we'll use in Soil Data Viewer. It's complicated and has over, you know, 50 tables. So what Soil Data Viewer does is provide the user access to soil interpretations and soil properties while shielding them from the complexity of the soil database. Each soil map unit is typically a set of polygons, may contain multiple soil components that have different uses and management. Soil Data Viewer makes it easy to compute a single value for a map unit and display results relieving a user from the burden of clearing the database, processing the data, and linking to a spatial map. Soil Data Viewer contains processing rules to enforce appropriate use of the data -- that's provided the users with the tool for quick geo-spatial analysis of soil data for use and resource assessment and management.

So what's the first thing you need for Soil Data Viewer is actually soil survey data that we're going to import in there. I get the question a lot of times, well where's that data come from, you know, where's it housed? So, it comes from Soil Data Mart NRCS, keeper of that data, click on that. Just to kind of show you what Soil Data Mart looks like and how to get your way through there.

So here's the first page on Soil Data Mart and what you need to do is you'll come in here and select your state. Then, you'll see over here on the left, your states. If you click on Montana, select your survey area, and we'll just pick on Phillips County which is MT 641. And then from

here, what you need to do is, download the data and this will get you your link to get the tabular and the spatial data and what you would do up here is click on this radio button tabular and spatial data, enter your email and then submit the request. Then you'll be added to the queue and you'll be emailed that data. And then it sends a zip file and what you need to do there is unzip it. But we're lucky in that the State Office has done all that for us so all that data is already there on the Citrix server on the State Office, 24k soils and SSURGO data, so that's kind of nice that they've done that for us.

I think what we can do now is I'm just going to kind of take you guys through using Soil Data Viewer. I'm going to open up Arc and I've already opened up a soil survey area, this is Blaine County. Just thru the regular Add. Then the next thing we need to do is view the Soil Data Viewer tool. So you come up here to click on view, and come down to Toolbars, then click on the Soil Data Viewer tool. Now that'll pop up the icon. Now we'll start running Soil Data Viewer, click on it. Now, what this is saying is please select a map layer and we've only got one soil map layer in there, so that's the only one. It's already highlighted for us, so we'll just hit ok.

Voice: Hey Josh. Would you show us again where that icon is for the Soil Data Viewer?

Josh: Yeah, it was up here under View.

Voice: Oh, okay,

Josh: And, then in the toolbars?

Voice: Okay, but where's it at in your picture? I don't see where the toolbar is in the toolbars.

Josh: It was up here, see that little icon there to the left? It's grayed out now because we have it open.

Voice: Okay, but it's only one icon.

Voice: Yep. And then it takes you to the interface right here.

Okay, so once Soil Data Viewer opens, you have the attribute folder. Now this over here on the left is where you can get all your soil properties and interpretations. So we can kind of just click

on a couple here. So like under Land Management, you have, potential roads and hazards for roads and trails. Another one, land classifications, here's like ecological site names ID, soil physical properties, available water capacity water, sand, silt and clays. Just all those tables that are in the tabular data for soil is housed here.

We're pretty fortunate in Montana that our NRCS is pretty aggressive, that they keep us updated pretty well and we have a lot of interps [sic] given to us. Other states, I know, they're lacking some of these interps.

The next thing we'll want --- Oh, I guess one other thing I want to mention is --- Let's kind of work here with a land classifications. We'll do the ecological site ID, actually site name. And then over here, under the batch attribute folder description gives the, gives the description of what that interpretation is all about. And it does it for all the various ones. So like here's for the hydric rating.

Okay, then the next thing you do is you'll come over here to your rating options and you have the option down here, basic motor advanced mode. I would suggest using the advanced mode. That just gives the user a little bit more flexibility and more input into what's come going to come out for the data. So your results come, it's going to be an eco-site name and we need to change this data selection options to the NRCS rangeland sites. Next would be with aggregation method. Under this one you have three different methods to choose from and it's kind of --- you click over here to get the description and it's the fifth paragraph down that kind of gets into what these different ones are.

I'm going to go back to my powerpoint, because it's pretty important and I'll explain that there's two that I usually deal with, dominant condition and dominant component. So, for example, dominant condition, if you had a soil map, unit soil A, soil B, soil C complex, and of that complex soil A made up 40%; soil B made up 30% and soil C made up 30% and soil A had a silty ecological site, soil B was a clay pan and C is also and clay pan. The dominant condition, then, would be soil B plus C. So when it --- when Soil Data Viewer creates a thematic map, it's going to display a clay pan ecological site when you're displaying it through dominant condition.

Now, dominant component, you have those same, the same soil map unit with the same composition, the 40, 30, 30. The dominant component, then, would be looking at that 40%, so it would display the silty ecological site.

Okay, another option that you have of this component percentage cutoff, that allows you to cut out, like, your minor components. You have major components in a soil map unit. Anything over 15% is a major and anything under that is a minor component. Which is only --- would only make up 15% of that map unit.

Okay, so what you can do then, if you want to see this data tabular, you come over to that report options and let's just pick on bascovy-lisam-dilts clays. You click on the aggregation report now, and what this is going to do is generate a report that shows what ecological site based on, I think it was dominant condition that we used. And this is, like I said this will be the tabular data. It's usually pretty good just running one. But you could do the whole survey area or you could do whatever map units. So here's your map unit singles 12, the map unit name is bascovy-lisam-dilts clays and the ecological site, based on dominate condition in the shallow clay, 11 to 14 inch precepitation zone. And then you can just print this out and you would have that. You can scroll down and then, same thing, it'll print out that rating option and kind of give a description of what that attribute that you were looking at. It talks about that. And then again, it reminds you what you used for the aggregation method and like I said, we used dominant condition.

So, now the next thing that we're all kind of waiting for to see here is, we'll go back to rating options and now we can map this and get a thematic map of this. You come down to this map, click on it, and it's going to produce a map.

One thing I guess I forgot to mention, when you first come in to Soil Data Viewer, there's a synchronization status and if it's green, it's good to go. What that means is your map layers and your database, your tabular data, you've got those talking to one another. It would come up red, let's say for example, if you brought in Blaine County spatial layer and Phillips County tabular data and you'd have to come over here and browse and point, and line those two up. But looks like it generated. Probably going to get an error here. For some reason it's coming up with an error and I'm not sure what would that mean.

And then, usually, I think part of what that error is, is usually under the layer there, under ecological site name, it'll actually list out the ecological sites so you don't have to manually go in and change those. But I'll go ahead and do that so we can see.

Okay, so now it's just kind of re-drawing. So now you can, once it draws, zoom into the area that you're interested in and now it's just a layer in Arc. Once you can view the data. There's

your soil polygons with associate aided ecological site for that soil map unit. Then you can come over here, hit identify, select that area, and that's the silty 10 to 14.

Now this is just a temporary theme, so if you want to save this, you need to export it. Do the export data and make it into a shapefile and save it that way.

Now there's, I've heard that there's ways that you can take more than one survey area and run Soil Data Viewer. I think you have to link to attribute tables first, but I haven't done that myself. There's an actual -- NTC puts on a Soil Data Viewer training through NRCS and I know that they go through some more advanced stuff, so that might be some more information out there for you.

About all I had. Is there any questions? Anything I can explain better?

Mitch: This is Mitch from the South Dakota Field Office. I just wanted to check on the status as far as this information for South Dakota, is that available?

Josh: Oh, here, why don't we just take a look and see what's...

Mitch: The reason I ask is, about three or four months ago, Jerry Esperson in North Dakota had done a lot of work trying to download this information. So it would be useable for South and North Dakota and I think he was able to get it done.

Josh: Yeah, I'm showing, you know on the Citrix there, there's quite a few of the South Dakota survey areas, so... What's one of your counties?

Mitch: Well, just like, Harding there.

Josh: Yeah, the spatial data there -- you have your tabular data there so, yeah, it would be available for you.

Mitch: Okay. Anyway, I just thought I would check with you.

Josh: Yeah. That's what I see is in there for now and I think State Offices keep it, you know, current because NRCS does updates. It's usually to the tabular data; the

spatial data doesn't change a whole lot unless they're doing an updated soil survey or something like that. But, I know state offices keeping that tabular data current.

Mitch: Well, I know at the time that Bradley had worked our stuff, there wasn't --- He couldn't find any information for South Dakota and apparently that's either been fixed he helped to download some of the information. Anyway, it worked.

Josh: So, I guess one thing, you know, back when I was showing you a soil data mark, when you sign up and get information sent to you, there's a place on there to check that you want to know when the update survey information is available and that'll get emailed to you.

Josh: Is there any other questions out there?

Chad: Yeah, hey Josh, can you hear me?

Josh: Yep.

Chad: This is Chad across the river. How did you, like on the erosion hazard indices, for example the Judith mock-ups that you did, did you have to create several layers like where you pulled the representative value slope off and then the erosion factors and then did you have to combine those?

Josh: Yes. What we did there is we took --- Yeah, I first downloaded the KW, the road ability factor, whole soil, and the representative soil or slope for the each soil map unit, and then created a new attribute field and then, if you remember, we had that indices. Anything, you know, anything greater than seven was severe.

Chad: Right.

Josh: So, yeah. That isn't available to us right now. Actually that came out of another interp. There's a soil degradation, or something like that, interp and that's part of that interpretation. But we used that.

Chad: So, you used that last step, though, outside of Soil Data Viewer. Do you use Soil Data Viewer to get the first, your two layers and then outside of Soil Data Viewer you

created that, put that separate field in your attribute table about the erosion in this indices?

Josh: Yes, that's correct. Because that is an interp that's in NSIS, the National Soils Information System. So that's why we had to do that manually ourselves. And that's kind of, you know, what we've been using in RMPs, I think I've talked to Miles City for erosion hazard. Think they're going to be using that in their RMP. We're using that up here in the High Line RMP and then I know Buffalo and Wyoming is also using that same interp for erosion hazard. And if anyone wants that information, contact me and I can help you get that.

Josh: You know, one of the main things is knowing, you know, the degradation method which one's more appropriate to use. And most of the time, you know, those two, the dominate component and dominant condition are the ones that I use.

All right, that's it. I'm done.

Thanks a lot, Josh.

All right, thanks.

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