

DATIM 7.0 Webinar Transcript [webinar held on 08/14/17]

>> Jim Westfall here with Northern Research Station (NRS) Forest Inventory and Analysis (FIA) program. I want to start out by thanking everyone for coming to the webinar today. I know everyone is really busy. We really appreciate your attendance. Just to cover the agenda real quickly, I was going to give a brief overview of DATIM. Then I will turn it over to Liz Burrill, also with NRS FIA. She will cover a little more in depth with what's in DATIM, including the modules. After Liz, we will have Emrys Treasure from Region 8. He will talk about a National Forest system application that he uses DATIM for. And then lastly, we will have a Q&A session that Sara just mentioned a few minutes ago.

>> To get started, a little bit of background, we do forest inventory monitoring for a lot of different reasons and at a variety of different scales. For instance, stand level up to landscape level. As an agency, we spent a lot of money on this. Some estimates are \$500 million a year just on inventory and monitoring. I've heard estimates higher than that. The main point is, we spend a lot of time and money on forest inventory and monitoring. So under the 2012 planning rule, forests had to do sustainability assessments by doing evaluations of ecological conditions and trends. Under that rule, every forest is left to develop their own monitoring and analytical approach. That could be good in some ways, but in a big picture, it usually results in redundancy of efforts and variability in the analytical methods. There is potential for improving the efficiency and consistency of information.

>> This is where DATIM comes in. The idea is to develop a nationally consistent tool that promotes the use of the best available science and NFS monitoring designs and data analyses. So to that end, the NFS EMC group began funding the development of DATIM to better serve NFS needs. Some of the underlying tenants there are to facilitate the use of FIA and Field Sample Vegetation data, enhance the existing data through use of the Forest Vegetation Simulator, and also to allow spatial queries using GIS map layers.

>> A few years ago, the Forest Inventory and Analysis program within R&D also began providing annual funding for the further development of DATIM. And with that, it changed things a little bit, like widening the scope to external users, supporting multiple web browsers, and things like that.

>> In addition to the funding I just talked about from both NFS and FIA, there's also staff time that gets contributed to provide broad guidance on direction and also provide technical assistance on the development side. On the NFS side, from the Washington office, Rick Ullrich and Jim Alegria are involved. We have Renate Bush from Region 1. Renate was actually one of the early pioneers of the DATIM concept. You will hear a little bit later in this webinar from Emrys Treasure in Region 8. Also you can see some other regional folks there like Jock Blackard, Wayne Robbie, Charlene Breeden, and Carlos Ramirez.

>> Also considerable staff time is contributed on the FIA side, by Liz Burrill and myself in the Northern Station, Jim Menlove in Rocky Mountain, Randy Morin and Scott Pugh also from Northern, then Joe Donnegan in the Pacific Northwest, and Carol Perry in the Southern Station.

>> This list is not exhaustive. There have been a lot of other people who have contributed to the DATIM project. I just want to make sure to point that out so no one feels slighted. Also, the time that people put in on this represents an investment too. It's not just the IRDB funding that I mentioned a few minutes ago. It's also all the staff time from the people shown here and others that are also a considerable effort on the NFS and FIA side.

>> How does work really get done? The software development work is primarily accomplished through agreements with University of Nevada Las Vegas and Southern Utah University. DATIM essentially operates on a six month release schedule. The first version that was available both internally and externally, was released in the summer of 2016. Version 7.0 we just put out about six weeks ago. Version 8.0 is scheduled for around January 1, 2018. The goal is to move to operations and maintenance mode by 2020. I also wanted to mention in the six month release schedule, that's not just all software development time in terms of coding. There's a lot that goes into that. There is coding, but then that code has to be tested. Things need to be fixed or adjusted after that testing phase.

>> Then we need to get that version put together and get it to the CIO (Chief Information Office) in time for them to look at it and have it go through all their processes in time for the release date. There's a lot of moving parts in a six month release window.

>> What are some of the benefits of the DATIM? I kind of hinted at this earlier, you will get national consistency in reporting of estimates on NFS lands. We will get consistent analysis between FIA and NFS. An important thing is reduced regional maintenance of existing tools. A number of the existing regional tools are kind of developed in a customized framework. It makes them somewhat difficult to maintain. Whereas DATIM is built by standard components, by a team. It should be easier to maintain that system than all the individual regional systems.

>> Centralized development means that the changes just need to be implemented once. They cascade throughout the system for everybody. Those changes are obviously in response to what users have asked for or changes that the CIO requires us to make. Again, from the CIO, a lot of those things are not trivial. In addition to the development of the tool, there is a lot of time spent trying to meet the CIO requirements and ongoing changes from the CIO to those requirements.

>> Going forward, NFS and FIA have been leading the development of DATIM. We think FIA would be a good place to keep that further development and also for the long term operations and maintenance needs. As we are doing now, NFS and FIA would collectively provide IRDB funding for development and maintenance. We are also currently engaged in efforts to increase the awareness and usage of DATIM, for instance a webinar like today, other in-depth training presentations, user guides, QuickStart guides, and the training module updates. As we release newer and newer versions, the user guides and the training modules need to reflect what the current version looks like.

>> If you want to try to use DATIM, you can find it at the website listed there at the top (www.fs.fed.us/emc/rig/DATIM/index.shtml). For Forest Service contacts within NFS, Jim Alegria would be a good person to get a hold of. For FIA, Liz Burrill and myself at the information listed there.

>> Then on the development side, I just wanted to acknowledge the folks who are leading that up: at Southern Utah University – Jim Pollard and Gretchen Andrew at UNLV.

>> So with that overview, I will turn it over to Liz Burrill to talk more about DATIM.

>> Thanks, Jim.

>> I am Liz Burrill. I've been with FIA about 17 years, but I've only been working on the DATIM project for a little over two years now. The first thing I'm going to talk about is the toolkit, it's the data analysis toolkit for inventory and monitoring. Our toolkit contain tools and there are four. The first one being DTIM, the design tool. That is really the tool that was developed to assist the forests in their planning and monitoring work. It takes users through the process of developing objectives, questions, and metrics. In getting those metrics, you can even obtain information about the number of plots that you would need to install to get an estimate with a certain precision.

>> The next tool I'm going to talk about is the DATIM compilation tool. That's really a power user tool. Right now, the majority of the data within DATIM is pulled from FIADB. You can run that data through the Forest Veg Simulator (FVS) in DCS to attach those FVS attributes to allow you to use them in the reporting tool.

>> We have the analysis tool, ATIM. That's your tabling tool – creating your tables and setting up your tables with pages, rows and columns to get your estimates and errors. And then we have the spatial analysis tool, the SIT tool, which allows users to add GIS attributes from their own map layers. That tool, we did push a patch last week. That tool is now available to users outside the Forest Service. It does require you to have access to Esri's ArcGIS software.

>> With that, where do you find DATIM? We do have a link, this URL at the top here (<https://www.fia.fs.fed.us/tools-data/index.php/>), takes you to FIA's Data and Tools page. DATIM is listed right there next to EVALIDator. I am going to recommend to people to never bookmark a tool directly. Always bookmark a webpage where you access the tool from. Tool URLs do change especially these days with the CIO migrations and updates of our network.

>> That button will take you to the Resource Information Group Ecosystem and Management Coordination webpage, RIG DATIM in shorthand. That page has a lot of information about DATIM on it. It does list people involved on the project, the individual developers, the people who are helping guide the development of DATIM and the subject matter experts. Jim mentioned the two releases per year – those releases are listed on there. There is training on there. We will get to that later.

>> This most recent 7.0 release had three big changes in it. The interface changed to a wizard based interface, to help guide users through a workflow. That was really based on feedback that we got with the previous tool. The other really visible change is allowing non-forest service users

to use that SIT tool with a token. The last change is really the biggest one, but it's completely behind the scenes. That was an overhaul of the programming from Microsoft Silverlight to a .NET framework. For non-programmers like me, what does that mean? DATIM can be used in browsers that are not Internet Explorer. That was a big push. All of those changes were driven by that widening in scope. We want to support not just Forest Service users, but also our stakeholders and the general public.

>> So the RIG-DATIM webpage is a good page to take a look at.

>> This is the DATIM Welcome page. On this page and on the left, you have a list of links. There is a help link if you have questions hit that. Contact us, same idea. The link to the different tools within DATIM. And then the bottom section of links all require Internet Explorer. There are information about the tools and details about the programming. There are some administrative tools. There is a user survey. I strongly encourage people who use DATIM to fill out the user survey. We want your feedback. We want to know what we are doing that is not so great. Or if you want to tell us we are doing great, we would like to hear that too. But really, we want to hear what we can improve on? What do we need to add that we are missing? This isn't my brainchild or Jim's brainchild. It's a team effort.

>> The last link is the DATIM training link. If you click that link, it will prompt you to provide an email address to get notified of DATIM training webinars.

>> In the upper right, there is a login. Right now, Forest Service people can log in with their Active Directory username and passwords. It does allow you to do some expanded functionalities within some of the tools. But is not required to use the tools.

>> It is required for one tool, however. I will back up on that one and we'll look back.

>> The DATIM compilation system, DCS, does require you to login. But the other tools you don't have to be logged in to use. But, you will have expanded functionality if you choose to login.

>> I'm going to take you to the analysis tools. The reason I'm going to focus on this tool is because it is probably the one most people will initially be looking at and using. It's certainly the one we expect the public to be hitting more.

>> When you open up the ATIM tool, you get this window. It explains a little bit about ATIM. You have two options. One is to create reports – to run reports that are already there or to create your own custom reports. The other option is to create a new analysis dataset. That new analysis does require you to be logged and it does require Internet Explorer to use that feature.

>> We are going to go into the running reports area. On the left, you see the five steps creating a report. You can use those buttons to navigate your way through creating a report or you can use the buttons at the bottom of the page to work your way through. Any time you see a triangle in DATIM, it is an expandable menu. You see how we have forests expanded and you see the National Forests Regions listed there. Those are expandable to the actual forest in those regions.

>> Here, I've expanded the states. I have further expanded Connecticut. I have selected to use Connecticut data 2010-2015 for my analysis. That's also expandable. You can get more information about that dataset if you wanted to. Then you would hit select report to move forward. Or you can hit select reports on the left and move forward also.

>> On this page, you will be selecting the reports that you want to run. I'm pointing out this filter by land use section. This is basically a grouping of the list of reports that show in the first window. The groupings are all land, forestland and timberland. We have done that to make the list a little bit easier to scroll through to find what you're looking for. I have checked and selected area of forest land by owner class and reserved status. Once you check it, it populates in that bottom pane. You will see that same functionality over and over again in this tool. You check something in the upper box and it populates in the lower box.

>> Again, you can expand that arrow by the name of the report to learn more about it. Or you could hit run reports at the bottom to move on.

>> When you do move on, a window will pop up and it will say that it is seeing which of your reports that you have selected are compatible with the analyses that you selected. To run a report, you would have to select an analysis that is compatible with it. When it runs, and it's done running, your results options will pop up. You can get results in Excel, XML or HTML.

>> Here is the HTML output for the report. At the top is the metadata information about what you selected including the filters that you used; how your table was set up in pages, rows, and columns; and the analysis you selected and the estimate attribute, which in this case is acres. The first table that you get when you select HTML is the estimate along with the percent sampling error that is followed in parentheses. You can see some of the errors are pretty high in this report. If you scroll down, in the HTML report, you can see that there is a table that has a number of non-zero plots within those estimates. At the very bottom, there is a citation that can be used if you want to reference this data or this report in another publication.

>> The Excel output will be a workbook with three tabs. One tab is going to have just a header information, that metadata. One tab is going to look similar to a pivot table. It has the number of non-zero plots and the subtotal. The third page is going to have the estimate for each classification variable.

>> Say you don't like any of the standard reports that we've got. You can create a custom report. So back in your step three, you can select a report or you can, in the upper right-hand, create a custom report. You can also use customize that's listed in the selected report summaries under the name of the report that you selected, customize and create custom report in the upper right, and button number four on the left all go to the same place.

>> That place looks like this. The steps are across the top of your page. You have an area to put in a title and a description. So I've got "Liz's New report" which is something I want to do. It's real clear there. You also have some options. If you start from a report and you click customize under the title, that information will be populated in here. You will simply be changing it, modifying it to create your new report. Or you can start with a blank slate and do whatever you choose.

>> The steps are listed at the top. But they are also listed at the bottom with the next estimate selection. If you use the tabs across the top, you can bounce back and forth. You don't have to go in order at all.

>> The next tab is estimate selection. Again, given that the list is quite long and it can be confusing if you are not used to looking at the FIA data, these categories will help you in finding what you are interested in. Expandable arrows are really menus. The tree volume I have expanded and I have selected gross cubic foot volume for my estimate.

>> Next up is the report format. This is your pages, rows, and columns just like in EVALIDator. You don't need to use a page grouping. Here, I have selected the Row Grouping to be "Species group", which is a tree level variable. In my Column grouping, I've selected "5 inch diameter" classes which is also a tree level group.

>> The next step, which is optional, are my dataset filters. So you would first choose your filter level. That would be "Unit", "Subunit", which you could think of as condition or subplot, "Tree", "Seedling", and "GIS" which would be from using the SIT tool.

>> Here we've picked subunit or condition level, subplot level. The filter attributes would be listed in the next drop-down. I've selected land use - forest. Then to get the actual value that I want to include in my report, I clicked the select filter value button. That pops up this window where you select the values that you want to include in your report. In this case, I am only interested in timberland. I checked that box and I hit add.

>> This is what the data set filter page will look like after you have selected your filters. Here we have two. One is that timberland and the other is really I'm only interested in getting the volume estimate for live trees.

>> The next tab will take you to your run options.

>> In here, you will be selecting the sampling error or confidence interval and what level of confidence you want to use in your report. If you want to duplicate an FIA report, select to present the sampling error percent and 68% confidence level.

>> Somebody had to explain this many times to me. But this is how I like to think about it: The confidence level is how likely the true mean is within the bounds you selected. If you select 90% confidence level, then your true answer is going to come out in 9 out of 10 times.

>> I also want to point out the hide row section on your run options page. I highly recommend selecting that you hide empty rows. If you do any report with species and species group or forest type, that's simply because we have many species and many forest types in our database. You do not want to get your report with a bunch of empty rows. If you hide them, you don't have to look at them.

>> The last tab in this process is the current design tab. This tab shows you everything that you selected for your report. You can look through this. If you like what you see, you can move on to run reports. If you want to change something, you can go back to that tab and change it and you're good to go.

>> Once again, we've run the report. In the HTML output, the upper part has metadata and what you have selected for your reports. Here we've got the gross cubic foot volume by species group and diameter class. And again, at the bottom part, you would have your numbers of nonzero plots that went into the estimate.

>> A word about training, on the RIG DATIM site, you will see that there is it DATIM 7.0 quick start guide and user guide. I recommend the quick start guide for users. Even if you are the type of person who likes to jump in without reading the instructions, please take a look at the quick start guide. It will make the experience much better. The other thing is the DATIM training module. These are videos that have been recorded with voiceover. They are excellent at taking you through every tool and performing functions. They are broken up into chapters. So you only have to watch the part that you want to. It's not like in AgLearn training. This is truly for the users. The other link I have there is the FIA DB documentation guide link. If you need help, that email is checked regularly. It might be myself answering your questions.

>> The FIA tools and data page, there is a training and tutorials link. The exact same information is offered there. Don't hesitate to reach out if you are using the tools and have a question or you have some advice on how we can improve it. With that, I will turn it over to Emrys Treasure, who is going to show you what he has done with DATIM.

>> Great, thank you Liz. Good afternoon, everyone. My name is Emrys Treasure, I'm the Regional Inventory and Monitoring and Assessment Coordinator in the Southern Region in Atlanta, Georgia. This afternoon I will share a brief example with you using DATIM to help evaluate an example plan level monitoring question including the using the Spatial Intersection Tool, which Liz did not demo but in addition to the analysis tool, which she did demo to produce customized results.

>> In this example, we will look at the Cherokee National Forest which occupies 639,000 acres in east Tennessee, in the southern Appalachian Mountains.

>> We are going to look specifically at restoration goals that include restoration of fire adapted oak communities through prescribed fire. In particular objectives for prescribed burning in oak and oak pine forest that call for a little over 5000 acres per year of prescribed fire with 4-12 year fire return intervals in these systems. There are number of plan monitoring questions and indicators that focus on this both from the activity side in other words, how much prescribed burning are we doing? But also on the effectiveness side of the prescribed burning, looking at abundance of seedlings and saplings of desired species over several generations. We will look at how we can combine activity monitoring from FACTS which is our corporate activity tracking database in combination with DATIM to evaluate seedling abundance within burned blocks on the Cherokee. The Cherokee has a 3x intensification rather than the standard, 1x or one plot per 6,000 acres, there is one plot per 2,000 acres.

>> First, I will walk you through the SIT tool or the Spatial Intersection tool. The first step of using the SIT is creating the point layer. So after you've installed the add-in in the ArcGIS ArcMap, you'll log in using your active directory username and password.

>> You will create the point layer based on the analysis of interest matching the projection of the future dataset of interest. In this case, we are using the Tennessee 2010-2014 analysis and then our Tennessee fire shape file which is the derived shape file from the enterprise data warehouse representing the prescribed fire polygons from FACTS.

>> Next, we will select our feature dataset. This is the data set that we will use to summarize the data by when we get into the analysis. We will select the Tennessee fire shape file again.

>> Next, we will select our analysis attribute. We will identify the polygon attribute that we want to transfer to the FIA plot data for use on the analysis tool. In this case, we are transferring the prescribed fire condition type which includes broadcast, under burn, and no burn conditions.

>> Then we will run the intersection which may take anywhere from several seconds to several minutes depending on the complexity of the intersection. You will know you have been successful when the dialog box pops up indicating the number of plots that have been loaded to DATIM for use in the analysis tool.

>> Now, we will jump back into the analysis tool which Liz showed previously. We are going to first, select the analysis to provide the context for running our reports/developing our reports. We will start off by running and selecting the “Tennessee 2010-2014 analysis.” You will notice in the selected analysis summary box at the bottom, there will be a summary of what the analysis includes and at the bottom, the attributes that are available from SIT. You will see the CNF burn, no burn intersection that we performed is loaded and available for us to use.

>> Next, we will select our report. We will make our initial report preference selection by selecting a standard report which is the tree count report for the number of live trees at least one inch in DBH.

>> We will customize this report because we are actually interested in the number of seedlings rather than the number of trees. The first thing we change is the estimate selection. We are also going to modify the report format so that the rows will be grouped by forest type and the columns will be grouped based on our SIT intersection results that we produced in the previous step using SIT. In this case, that will be grouping those by prescribed fire types. So broadcast, under burn, and no burn.

>> We are also going to apply a filter to focus on oak species since those are the species we are most interested in this scenario.

>> Finally, we return the result which you can see reflects our SIT attributes as columns and Forest Types as rows.

>> As Liz pointed out, I’ll draw your attention to the sampling error percentage and to the plot count which is important for making reliable interpretations of differences between estimates. To comment a little further on the specific example, the average number of seedlings per acre for the under burn category was notably higher than for broadcast burning, for all prescribed burning and no fire samples. It should be noted that the sample size for the under burning class was quite low, with only eleven samples – ten for the Oak-Hickory forest type group. A low sample size should be considered before making any concrete decisions about the differences, including

definitions of activity type codes from our FACTS database, as well. This proves to be an interesting effort and we'll be looking at the chronological sequence between when the plot was measured and when the prescribed fire occurred. And this brings me to my final comments which are the work flow comparison.

>> In a traditional mode of operation, we would obtain a shape file, make a spatial data service request to FIA to intersect the plots, receive that intersection result, retrieve the MS access representation of FIA data for that state from FIA DataMart, perform our analysis and then get our results. In DATIM we are able to use the SIT add-in and ArcMap, apply the intersection ourselves, and get to the results in ATIM in three steps pretty efficiently.

>> I think the key here of the ability to efficiently iterate on an analysis question to identify potentially significant results. It's really the first step in the process leading to more in-depth analysis including collaboration with FIA analysts to ensure credibility of results and interpretation.

>> As I mentioned, in this example, we did pursue a more in-depth analysis to understand both the chronological sequence of prescribed burning and FIA plot collection to ensure that we were looking at before and after effects. It is important to not miss the opportunity to consider this alongside other monitoring sources.

>> So in our regions, we also have fire effects monitoring that we can look to supplement and complement these results. So, that concludes my portion of the webinar. I will turn it back over to Jim to facilitate questions and answers.

>> Thank you Emrys. I also want to thank Liz for her presentation. We will move onto the Q&A session now. If you have a question, you can either ask the question over the phone or if you want to, you can type it into the box that's on the Adobe Connect webpage.