



## *The Vector*

Newsletter of the Montana Association of Geographic Information Professionals

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*January 2009*

The Corner

Kris Larson, MAGIP President

Robin Trenbeath, State Geographic Information Officer

In our last article, we promised to provide more information on the Base Map Service Center (BMSC). So, what is the BMSC? The concept of a federation allows data to be stored, retrieved and/or used from many locations; the role of the BMSC is to ensure that for State of Montana agencies this is accomplished in the most efficient and effective manner possible.

By designating one spatial focal point within State government, that part of the statewide GIS Federation begins to define and clarify roles and responsibilities, provides a decision-point for resolving issues, affords the State with a single contact point where individuals and organizations wanting information about GIS can go, and reduces costs while increasing information viability. The Center is the place where development of the State's long-term spatial direction occurs, the central marketing arm for advocating the value of spatial tools, and the group that can best advocate with public decision-makers for adequate, statewide geospatial funding. Keep watching for more news about the BMSC as the concept is implemented and evolves. If you have ideas, let us know.

What else is going on in our GIS Community? The Intermountain GIS Conference will be at the Coeur d'Alene Resort, April 6 – 10. Intermountain conferences are an extraordinary opportunity to share resources and learn new skills. As an added bonus, the founding members adopted a philosophy that no-one should be prevented from attending merely due to cost. There are few conferences in the entire nation that provide so much opportunity for so little money. Check out <http://www.intermountaingis.org/> for more info.

The Annual MAGIP meeting will be May 21, 2009 in Helena. Everyone is invited and encouraged to attend. There will be five openings on the MAGIP Board of Directors, and this will be the first official meeting of the new board members. This is YOUR opportunity to get involved, to create the kind of community that you'd like to see. Watch for more details about nominations in late March or check <http://www.magip.org/> for more information.

The next MLIAC meeting is March 5. Consider attending. The decisions made here effect everyone doing GIS in Montana and the meetings are always informative. For updates or more information about meetings, go to <http://itsd.mt.gov/policy/councils/mliac/default.mcp>.

Best to you in 2009! We hope to see or hear from you soon.

# Let's Hear from the Board of Directors

What is your favorite quote?



**Kris Larson, President**

"I just figure if they see one grumpy person & one happy person, maybe they will look at the happy person." - Jean Larson, Famous Mom



**Erin Geraghty, Vice President**

"Men Plan, God Laughs."

**Lee Macholz, Secretary**

"One can never be angry when one looks at a penguin."



**Bryant Ralston**

"Be sure that the toe you step on today is NOT connected to the butt you have to kiss tomorrow."

**Van Shelhamer, Education Committee**

"Regardless of your lot in life, you can build something beautiful."  
Zig Ziglar.



**Nat Carter**

"Not only is it easy to lie with maps, it's essential. To portray meaningful relationships for a complex, three-dimensional world on a flat sheet of paper or video screen, a map must distort reality...There is no escape from the cartographic paradox: to present a useful and truthful picture, an accurate map must tell white lies." - Mark Monmonier from How to Lie with Maps.

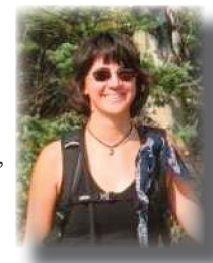
**Michael Fashoway, Technical Committee**

"Sometimes you eat the bar, and sometimes, well, he eats you."



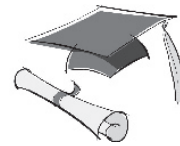
**Patricia Williams, Professional Development Committee**

"When we try to pick out anything by itself, we find it hitched to everything else in the universe."  
John Muir



# ***Education Committee Needs Member Assistance***

Van Shelhamer



The MAGIP Education Committee needs your assistance in spreading the word about the following activities.

The Committee has purchased a secure traveling case for the 15 Garmin 60 GPS units that the Montana Natural History Center received as part of a grant. The GPS Case is available from the Montana Natural History Center in Missoula. The MAGIP Board has provided up to \$500.00 to help cover shipping cost and repair to GPS units that may occur this next year. The GPS Traveling case may be checked out for two - three week periods by contacting the Center at <http://the.naturecenter.org/teacher-resources/traveling-trunks/> or contact Lisa Bickel at 406.327.0405.

The GPS Case is the first step the Committee has undertaken to update and replace the current 7-12th grade trunk that has become out dated and seldom used. The Board has approved \$1000 to be spent on creating a virtual trunk to replace the 6-12 Geospatial Trunk. We are looking for someone that would like to take that responsibility on. Interested individuals should contact Van Shelhamer at [van@geoessentials.com](mailto:van@geoessentials.com).

The MAGIP Virtual trunk is envisioned as a series of lessons and activities, grouped by grade level and subject areas, that teachers can quickly access and use in their classroom with a minimum of time and effort in preparation. Reed Kuennen of Whitefish Public Schools has submitted several science lessons for use in the virtual trunk. As a part of Montana EdPARC activities, Dean Thompson and Terrie Noser, Asa Wood Elementary School, Libby developed and pilot tested an after school geospatial community safety program for 3rd and 4th graders. Bill Jimmerson, Montana FFA Advisor, Bozeman, also developed lessons on using GPS units in the classroom. These lessons will become a part of the MAGIP Virtual Trunk. If members know of other lessons that have been developed and used by teachers, please see if they will provide an electronic copy of their lesson and activities that can be added to the Virtual Trunk.

The K-5 Geospatial trunk has a number of spatial learning activities that are current and applicable. Examples of trunk content are: NEXUS 3-Point Compass with 24 individual compasses & game folder, Topographic Map Symbol sheets, A Topographic Field Trip of Washington, D. C, Map Adventures, Maps of the Greater Yellowstone Area, and a number of posters.

In later December a press release was distributed to a variety of teacher lists announcing the K-12 Curriculum request for proposals (RFP). The RFP is for a \$1,000 grant to develop K-12 Curriculum that helps bring GIS, GPS, remote sensing and mapping technologies into the classroom. The focus of the project is to create lessons that merge existing subject curriculums with GIS technologies. A deadline for submission of February 2nd has been established. Teachers can obtain more information at [http://www.magip.org/uploads/resources/547/k12grant\\_2009.htm](http://www.magip.org/uploads/resources/547/k12grant_2009.htm). Find a teacher and encourage them to apply.

The Board has approved \$1000 to be given as \$200.00 scholarship to teachers who want to attend a geospatial educational workshop, or to assist a teacher who is teaching GIS to help train teachers at another school. The Education Committee web page will soon contain scholarship applications and criteria. If you have ideas about criteria you would like to be used in selecting these scholarships, please submit them to [van@geoessentials.com](mailto:van@geoessentials.com).

The Committee needs your assistance in making undergrad and graduate students aware of the Higher Education GIS Scholarship. MAGIP has established scholarships for undergraduate seniors or first year graduate students at Montana colleges and universities. To be eligible, the recipient may be from any discipline but must be working on projects that use GIS as part of their research or thesis. Students are awarded a onetime \$1000.00 scholarship and are encouraged to present their work at the annual Intermountain GIS conference. The scholarship applications are due March 31, 2009. The winner will be notified in April. More scholarship information can be obtained at [http://magip.org/uploads/resources/546/scholarship\\_info\\_2009.html](http://magip.org/uploads/resources/546/scholarship_info_2009.html). Specific criteria and application process can be found at [http://magip.org/uploads/resources/545/scholarship\\_call\\_2009.html](http://magip.org/uploads/resources/545/scholarship_call_2009.html).



Montana's "Crucial Areas and Connectivity Assessment"  
Topic of January Montana State Digital Library Seminar

Montana Fish, Wildlife and Parks (FWP) is undertaking a significant project to more proactively address the changing landscape of the state. The Crucial Areas and Connectivity Assessment will be using a variety of spatial analysis to best identify and assess Montana's landscape for recreational value and habitat quality, condition and animal use. The initial focus will identify species occurrence and distribution data that are needed for the Assessment. Occupancy predictions based on these data and other spatial layers may also be developed. Expert knowledge will play a key role in determining and refining the process and in the final consideration of an area's importance.

There will be five areas of the assessment: three "placed-based" components where data will be displayed, analyzed and summarizing using GIS; these include an assessment of fish, wildlife and recreation values; fish and wildlife corridor and connectivity areas and major risks to these resources. Within each assessment component, several data types will be used, evaluated separately and combined/weighed together for a final assessment evaluation. These include sport fish, terrestrial game and species of concern. The companion products include a series of FWP management recommendations associated with each risk that can be used in combination with the Assessment results. The recommendations will also be further used to develop broader scale, higher-level policies with external partners. Completion of the project is expected in July 2009. For more information, please contact Janet Hess-Herbert [jhessherbert@mt.gov](mailto:jhessherbert@mt.gov)

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***GIS Best Practices in Montana***  
-Michael Fashoway

It is the mission of MAGIP to "foster technical cooperation and promote the development of sound policy and practices that will support the efficient and effective use of geographic information systems". With this in mind, the MAGIP Technical Committee met at the 2008 MAGIP Fall Technical Session in Great Falls to discuss best practices for GIS. The objective of the meeting was to identify, document and outline a process for adoption and endorsement of GIS best practices in Montana. The Technical Committee recognizes that a set of formalized best practices will not only encourage the use of standards but will make it easier to share data and save GIS practitioners work and time.

It is important to note that adoption of a best practice is not a mandate for its use nor is a best practice applicable to every situation. Best practices simply represent efficient and effective ways to accomplish many common tasks that have been tested and proven by a community. Only in the instance where a best practice is a standard (e.g. metadata in the GIS Portal or persistent identifiers in many of the framework datasets) is it required and enforced. However, by committing to using best practices one acknowledges the benefits of standards to one's organization and the larger user community.

The best practices that were identified by the Technical Committee do not represent all possible best practices. At this time, the Technical Committee chose to focus on the most common standards in Montana, many of which are already in use, to advance as best practices and anticipates the advancement of best practices will be an ongoing effort.

The MAGIP Technical Committee invites all MAGIP members to review and provide comments on the following recommendations:

#### *Recommendation 1*

MAGIP adopt the following as best practices:

1. Metadata – the proposed GIS Portal metadata standard [http://gisportal.mt.gov/metadata/portal\\_metadata\\_standard.html](http://gisportal.mt.gov/metadata/portal_metadata_standard.html)
2. Persistent Identifiers – the current persistent unique identifiers that are implemented in some of the MSDI Framework layers [http://giscoordination.mt.gov/critical\\_infra/PersistentIDs.pdf](http://giscoordination.mt.gov/critical_infra/PersistentIDs.pdf)
3. Spatial Reference System – Montana State Plane NAD 83 meters (the projection file NAD\_1983\_StatePlane\_Montana\_FIPS\_2500 in ESRI products) based on [http://data.opi.state.mt.us/bills/mca\\_toc/70\\_22\\_2.htm](http://data.opi.state.mt.us/bills/mca_toc/70_22_2.htm)

#### *Recommendation 2*

After adoption by MAGIP, the above best practices be recommended for endorsement by the Montana Land Information Advisory Council (MLIAC).

#### *Recommendation 3*

All best practices adopted by MAGIP be posted to the MAGIP website, at a minimum, and that an announcement be made to the MAGIP list serve. Additionally, information about and links to the best practices may be posted to other websites including the GIS Portal, GIS Coordination, and the Montana Land Information Advisory Council websites. The Technical Committee acknowledges that other means of outreach and education regarding best practices will be necessary (workshops, a “stamp of approval” for datasets that are created and maintained using best practices, etc.) and will coordinate with the MAGIP Education and/or Professional Development Committees.

All comments should be sent to Michael Fashoway ([mfashoway@mt.gov](mailto:mfashoway@mt.gov)), MAGIP Technical Committee Chair, by January 30, 2009.

The Technical Committee is open to all MAGIP members and welcomes additional participation. For more information, please see the MAGIP website ([www.magip.org](http://www.magip.org)) or contact Michael Fashoway. All MAGIP members, whether they are on the Technical Committee or not, are encouraged to suggest best practices for the Technical Committee to consider.

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AGCAM the New Eye in the SKY  
Van Shelhamer and Doug Olsen, UND

The University of North Dakota, Upper Midwest Aerospace Consortium (UMAC) has sent its first scientific instrument into space. The Agricultural Camera (AgCam) launched into orbit on November 14, 2008 for installation aboard the International Space Station. The multi-spectral Earth-observing camera will begin operations in May 2009, pending successful testing in April.

AgCam, designed and crafted to exacting NASA space flight standards by students from UND departments, will capture on-demand 8-bit, red and near infrared images of land, and other topographic features across the upper Midwest. These images will be used as a decision support system resource by farmers, ranchers, tribal and natural resource managers, and researchers. Among many other uses, AgCam multispectral images can be used to analyze crops, forest resources, and other plant ecosystems. Educators also will have access to these images for in-classroom use as part of environmental, geography, agriculture and related curricula.

Unlike Landsat, which always has the same flight path over the ground, the ISS ground track varies from day to day. With a 92 minute orbit and the varying ground track of the ISS, revisit time varies dramatically. Under best conditions (long days, middle of the summer, right phase of the orbit), certain ground locations can be imaged 3-4 times in one day. The camera has an off-nadir look capability, meaning the camera can be pointed to the side up to about 30 degrees, which significantly improves the revisit frequencies. At peak times (April - October), 2-4 images per orbit for 4 consecutive orbits are anticipated. At times there will be periods of up to 3 weeks long when the ground location will be in darkness. These 'blackout' periods vary and are hard to predict far in advance.

The projected swath width will be about 57 kilometers, or 35 miles with a resolution of about 30 meters. Because the ISS altitude varies from 420 to 350 Km above the Earth, higher swaths will be wider and vice versa. Based on the ISS orbits, images can be captured anywhere south of 51.6 degrees north latitude and north of 51.6 degrees in the southern hemisphere. In our area, ISS will be traveling mostly west to east sometimes heading northeast, sometimes heading southeast. A more exact flight pattern will be available about testing time. (<http://spaceflight.nasa.gov/realdata/tracking/>)

To obtain images end-user will need to register at <http://www.umac.org/sensors/agcam/>. End-users will send image requests to an AgCam Science Operations Center (SOC) at the University of North Dakota. Requests will need to be received 4-7 days in advance, but will be delivered to the requestor via Digital NGP at UMAC.org within 1-2 days of acquisition. Once posted on the Digital NGP, any registered user will be able to access the image. The AgCam SOC, student operators will receive AgCam imagery request forms, and will convert these requests into specific sets of commands for uplink to AgCam. Through coordination with NASA for ISS and WOLF rack operations, these image acquisition and other AgCam operational commands will be uplinked to the AgCam payload software, which will take images over specific areas of the Earth. Resulting imagery data will be down linked and transferred to UND for processing. Rapid delivery of imagery enables management decisions to be applied to the current season's operations.

Because crop canopy reflectance in AgCam's spectral bands is correlative to nitrogen concentrations in the plant biomass; knowledge of variability of plant nitrogen across fields can be used to improve in-season nitrogen application decisions. Farmers using variable-rate application and other precision agriculture techniques will be able to dynamically delineate management zones as the crop vegetation canopy changes during the growing season; this can result in more effective use of fertilizer and other chemical inputs and reduce negative environmental effects. Also, ranchers and natural resource managers will be better able to determine vegetative conditions on the ground, thus helping avoid ecosystem damage.

Source: University of North Dakota, Upper Midwest Aerospace Consortium, [www.umac.org](http://www.umac.org)

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## **MAGIP Holds 2008 Fall Technical Session in Great Falls**

**By, Pat Halcro, Michael Fashoway and Janet Cornish (MAGIP Administrator)**

In October of 2008, more than 80 people gathered in Great Falls for the MAGIP Fall Technical Session. The session covered a variety of topics, many with a special emphasis on GIS applications. For example, participants in the GIS and Planning workshop were able to take advantage of "hands-on" instruction in the use of GIS for land use planning. One of the most popular sessions focused on ArcGIS Parcel Management, which drew at least 50 participants. About a dozen people attended a day-long workshop which addressed the annual Montana Land Information Grant application process. The Technical Session also included a series of discussions on how achieve certification as a GIS Professional or GISP.

Session participants were impressed with the variety and quality of the presentations. Organizers Michael Fashoway and Pat Halcro were thrilled with the outcome of the session, which was held at the Town House Inn in Great Falls. "The location worked very well in my opinion, with the exception of some packed rooms (but that's a good thing, isn't it?). I received several compliments about the content of the sessions", said Fashoway in his session wrap up e-mail to the Technical Session planning committee. "I also want to thank all those that helped plan, donated laptops or projectors, presented, or helped in any other way", he said.

Pat Halcro, Mapping Resource Coordinator for the City of Great Falls was responsible for arranging the facilities for the Technical Session and for welcoming participants and speakers to the "Electric City", a fitting moniker for a GIS conference location.

Mike Sweet, UM School of Forestry and Conservation summed it up nicely:

*"Michael Fashoway (MAGIP Technical Committee chair) and Pat Halcro (Great Falls GIS-er extraordinaire) led the charge on the Oct 28-29 2008 MAGIP Technical Sessions. As has been mentioned, over 80 people attended and ... the sessions were some of the best we have had. Kudos to all of those who had a hand in helping Michael and Pat make this event a success. The MAGIP membership also deserves recognition. The content of the Technical Session was largely driven by those MAGIP members who responded to inquiries and surveys regarding their training\educational needs."*

## MLIAC Report

The last meeting of the Montana Land Information Advisory Council (MLIAC) was held on December 9, 2008. Among the topics discussed at that meeting were the Governor's 2010/2011 budget, the 2009/2010 Land Plan, the status of the Stewardship Review Process.

The Governor's proposed budget at the time of the meeting contained \$1 Million designated for projects related to the Governor's Challenge. Unfortunately this funding was absent from the version of the governor's budget released in the days following the MLIAC meeting.

The 2009/2010 Land plan was passed by council pending some requested changes to the draft presented to the council. The final land plan is now available on the MLIAC website. The direct link to the plan is:

[http://itsd.mt.gov/content/policy/councils/mliac/docs/Landplan\\_0910](http://itsd.mt.gov/content/policy/councils/mliac/docs/Landplan_0910)

The Land Plan sets the priorities for MLIAC for the coming year and also serves as guidance to the Grants subcommittee for the awarding of MLIAC grants.

Applications for MLIAC grant funding will be available beginning January 15, 2009 and the application period will close on February 15, 2009. If you are interested in applying for an MLIAC grant, please review the Land Plan and check the MLIAC website for a posting of the application packet as well as guidance for completing the application form:

<http://itsd.mt.gov/policy/councils/mliac/default.mcp>

Potential applicants are also encouraged to contact any of the Framework Layer theme stewards that may be impacted by the proposed project. A full listing of Framework Layers along with theme stewards and contact information is available at:

<http://nris.mt.gov/nsdi/>

In reporting on the efforts to review Stewardship of MSDI Framework Layers, Robin Trenbeath expressed disappointment at the lack of feedback from people interested in participating in the review process. Imagery, Soils, and Geodetic Control layers are still the first slated for stewardship review. Volunteers from across the GIS community with an interest in the development of any of these Framework Layers are encouraged to contact Robin Trenbeath ([rtrenbeath@mt.gov](mailto:rtrenbeath@mt.gov)) to express interest in participating in this review process. You do not have to be a council member or a MAGIP member to get involved in the stewardship review process. Anyone with an interest in the future development of these Framework Layers is encouraged to get involved.

Please visit the MLIAC website for more detailed information including the agenda and minutes from past MLIAC meetings. An agenda is posted for the December 9 meeting, and the minutes will be posted in the near future. The next MLIAC meeting is slated to occur on March 5, 2008 at a location to be determined.

MLIAC Website:

<http://itsd.mt.gov/policy/councils/mliac/default.mcp>

MLIAC Website:

<http://itsd.mt.gov/policy/councils/mliac/default.mcp>



### Grant Info:

1. Montana Land Information Council Grants:

<http://itsd.mt.gov/policy/councils/mliac/default.mcp>



# MAGIP

# January 2009

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MLIA Grants available MT State Digital Library seminar

18 19 20 21 22 23 24

25 26 27 28 29 30 31  
ID State Univ. GTC

Montana Association of Geographic Information Professionals

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Helena MT 59601

For questions or submissions to the MAGIP calendar, please email Janet Cornish.

Phone: 406.723.7993  
E-mail: JanAllyce@aol.com

Please also see our Calendar of Events page at: <http://www.magip.org/events/default.asp?ID=212>

## SCHEDULE OF EVENTS

- January 16: Janet Hess-Herbert, Information Management Bureau Chief with Montana Fish, Wildlife and Parks (FWP), is scheduled to present "Montana FWP Crucial Areas and Connectivity Assessment" at a Montana State Digital Library <http://msl.state.mt.us/news/010909.asp>
- January 30: Idaho State University GIS Training Center - Map-Books with ArcGIS <http://giscenter.isu.edu/training/index.htm>

# MAGIP

## February 2009

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16 Deadline for MLIA Grants	17	18	19	20	21
22	23	24	25	26	27	28

Montana Association of Geographic  
Information Professionals

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Phone: 406.723.7993  
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Please also see our Calendar of Events  
page at: [http://www.magip.org/  
events/default.asp?ID=212](http://www.magip.org/events/default.asp?ID=212)

### SCHEDULE OF EVENTS

- February 18 - 20: ESRI Federal  
Users' Conference  
[http://www.esri.com/events/  
feduc/index.html](http://www.esri.com/events/feduc/index.html)

# MAGIP

# March 2009

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5 MLIAC Meeting	6	7
8	9	10 MAGIP Spring Technical Session	11 MAGIP Spring Technical Session	12 MAGIP Spring Technical Session	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

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events/default.asp?ID=212](http://www.magip.org/events/default.asp?ID=212)

## SCHEDULE OF EVENTS

- March 8 - 13: American Society for Photogrammetry and Remote Sensing Annual Conference  
[http://www.asprs.org/  
baltimore09/index.html](http://www.asprs.org/baltimore09/index.html)
- March 10 - 12: MAGIP Montana Association of Geographic Information Professionals (MAGIP) Spring Technical Session, Miles City, MT  
<http://www.magip.org/events>
- March 22 - 27: American Association of Geographers (AAG) Annual Meeting  
[http://www.aag.org/  
annualmeetings/2009/index.htm](http://www.aag.org/annualmeetings/2009/index.htm)
- March 30 - April 1: Building Geodatabases, ESRI Training,  
<http://training.esri.com>
- April 8 - 10: Intermountain GIS Conference, Coeur d'Alene  
[www.intermountaingis.org](http://www.intermountaingis.org)