

Alberta Agriculture: GIS improves staff efficiency and constituency satisfaction

Overview

■ *The Challenge*

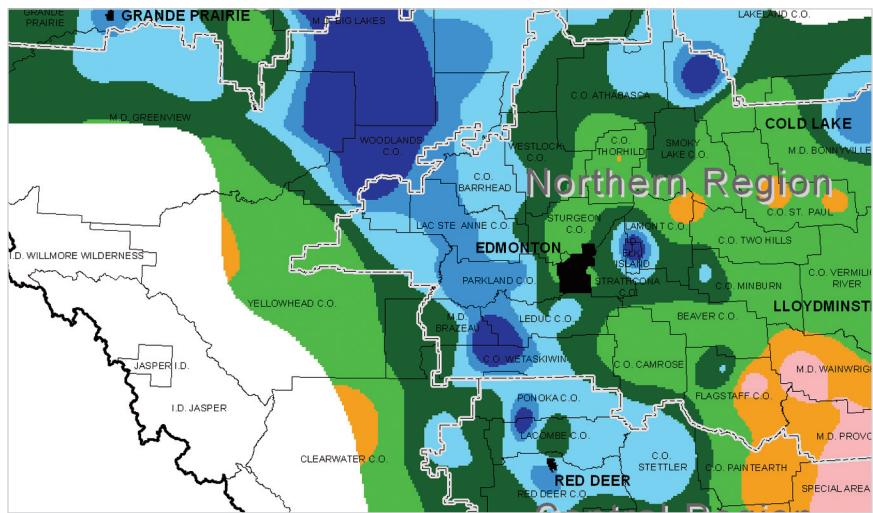
Alberta Agriculture, Food and Rural Development provides detailed climate, weather and soil moisture data to their agricultural industry constituents. The agency needed to deliver the information in an easily accessible online format to better serve its constituency, while decreasing ad hoc data requests to significantly reduce staff workload.

■ *The Solution*

The agency launched the AgroClimatic Information Service (ACIS), which provides Web-based near-realtime and historical data that allows agricultural producers to make decisions in response to weather-related and soil moisture condition events.

■ *Why IBM?*

Alberta Agriculture found that IBM DB2® Data Warehouse Edition and IBM WebSphere® Application Server provided superior and scalable technology for managing their growing repository of Geographic Information System (GIS) data. Because Alberta was already using GIS applications from IBM Business Partner ESRI, an IBM database solution was a natural choice, as it integrates well with ESRI software.



■ *Key Benefit*

By enabling easy-to-use online access to near realtime weather and climate conditions, backed with historical data, ACIS provides agricultural producers the necessary data on which to base critical decisions.

Helping Alberta serve their agricultural constituency

Alberta Agriculture, Food and Rural Development is a government agency that provides in-depth climate and soil information to agricultural producers and crop insurance agencies in the province of Alberta, Canada.

Alberta Agriculture's primary clients –farmers and ranchers– rely on the information provided to support critical decisions regarding activities such as dealing with frost, plus when and how much to seed and irrigate fields. The information is also accessed by other agricultural service companies, resource management agencies and real estate professionals.

Improving efficiency and constituent satisfaction

Business Benefits

- Provides up-to-date, province-wide climatic information
- Increases constituent satisfaction
- Improves staff efficiency

Technology Benefits

- Increased access to historical data
- Improved overall performance
- Near realtime data available online

Alberta Agriculture, which maintains a vast network of weather stations that collect information on parameters such as air temperature, humidity, soil moisture and wind speed, found that it was spending an inordinate amount of time responding to ad hoc requests, accessing and relaying information to its constituency. The Agency determined that it needed a more automated approach to serving its varied agricultural and interdepartmental clientele.

In addition to receiving near realtime information from approximately 200 weather stations throughout the agricultural regions of the province, Alberta Agriculture also maintains a database covering more than the last 100 years of historical weather information. This information is important for long-term agricultural planning or responding to an extreme weather event. "We needed a way to efficiently communicate our realtime data, as well as a way to share the static information," says Jamie Wuite, Head of Water Management Section, Alberta Agriculture and Food. "Now, our online users range from agricultural producers who need to access climactic information quickly, to other resource managers, real estate agents, crop insurance agents and other departments within Alberta Agriculture."

Dispersing crucial information efficiently

Alberta Agriculture already had GIS applications from ESRI in place, creating weather and soil condition maps with information gathered from the network of weather stations. These applications were supported by IBM databases.

Using the existing system, agency staff was responding to informational requests from its clientele on an individual basis. This was a time consuming and inefficient process. Alberta Agriculture decided that the best way to share its information would be to create an online environment that would house the data while also providing any interested parties self-service capabilities.

Users can now log onto the AgroClimatic Information Service (ACIS), and access in-depth and interactive maps and data. ACIS is based on GIS technology from ESRI. GIS is capable of integrating, storing, editing, analyzing, and displaying geographically-referenced information. The ACIS site allows users to generate, analyze, and exploit spatial information about geographic, weather and climatic features. Although weather and climate data was always available to the agricultural community in its raw state, the ACIS applications make this data more available and easier to use. ACIS uses the Linux® operating system, running on IBM System x™ servers, which provides Alberta Agriculture with a reliable, secure and scalable platform.

"We've got a huge amount of data behind the ESRI GIS applications, and the IBM databases let us access them quickly and efficiently."

— Jamie Wuite, Head of Water Management Section, Alberta Agriculture and Food

ACIS has several applications to serve agricultural stakeholders, including a menu-driven selection of pre-built maps, and self-serve customizable maps using query builders. Additionally, users can download data for use in creating predictive models in other applications. At the core of ACIS is an IBM DB2 database of over 500 million records representing a 100-year period of climatic information.

"On the server side, we are using IBM DB2 Data Warehouse Edition and IBM WebSphere Application Server. We did an evaluation based on price, platform flexibility, scalability and performance and the IBM products were the clear winner," explains Chris Wright, Senior Systems Architect, Alberta Agriculture and Food, Information Technology Services Division.

WebSphere Application Server and ESRI ArcIMS are the work-horses for the Web site; they process all the client requests and render the data provided by DB2 Data Warehouse Edition. ESRI software ArcSDE is the spatial engine that sits on top of the database, and together they store all of the spatial and climate data, approximately 800 GB, with some data sets exceeding 256 million rows of data.

Diverse agricultural information, easily accessed

There are four main sections on the ACIS site, and all a user needs is an Internet connection to access them:

- *Quick Viewer: includes hundreds of static, pre-built maps, some dating back to 1901. Examples include drought maps, soil moisture maps, and the Agro-Climatic Atlas, which displays relevant climate elements like precipitation, heat units, solar radiation, temperature, and more.*
- *Climate Mapper: allows users to customize maps by selecting data such as precipitation, mean, minimum or maximum temperature, relative humidity, radiation, and wind speed. Mapping information can be displayed based on a yearly, quarterly, monthly, or growing season basis.*
- *Weather Mapper: creates customized maps of near realtime data of various measurements, such as precipitation, snow fall, frost severity and more. The data is current up to the previous day.*
- *Station Viewer: creates graphs displaying local weather data such as accumulated precipitation, air temperature, humidity, soil moisture, soil temperature, wind speed, and more. The data is current up to the previous day.*

Key Components

- IBM DB2 Data Warehouse Edition
- IBM DB2 Spatial Extender
- IBM WebSphere Application Server
- IBM System x
- Linux Operating System
- ESRI ArcIMS
- ESRI ArcGIS
- ESRI ArcSDE

Allowing staff to exercise their expertise

"Besides having to respond to time-consuming external requests, our staff used to have to respond to internal requests from other departments within Agriculture and Food, and help them track down graphics and information. Now, with all the new online tools we have, all these people can easily find what they need, and it frees up our GIS expertise to engage in tasks such as soil moisture modeling, monitoring and mapping," explains Wuite. Because the agency staff now has more time to spend on analytical tasks, unhindered by continuous requests for information, Alberta Agriculture is now able to concentrate on extending the amount of research it can offer its clientele, and is also investigating ways to expand services.

For more information

To see the ACIS site in action, visit it at:

[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf>All/acis10819](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf>All/acis10819)

To learn how IBM and ESRI GIS technology can help you more efficiently deliver robust information to your constituency, please contact your IBM representative or visit us at:

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