

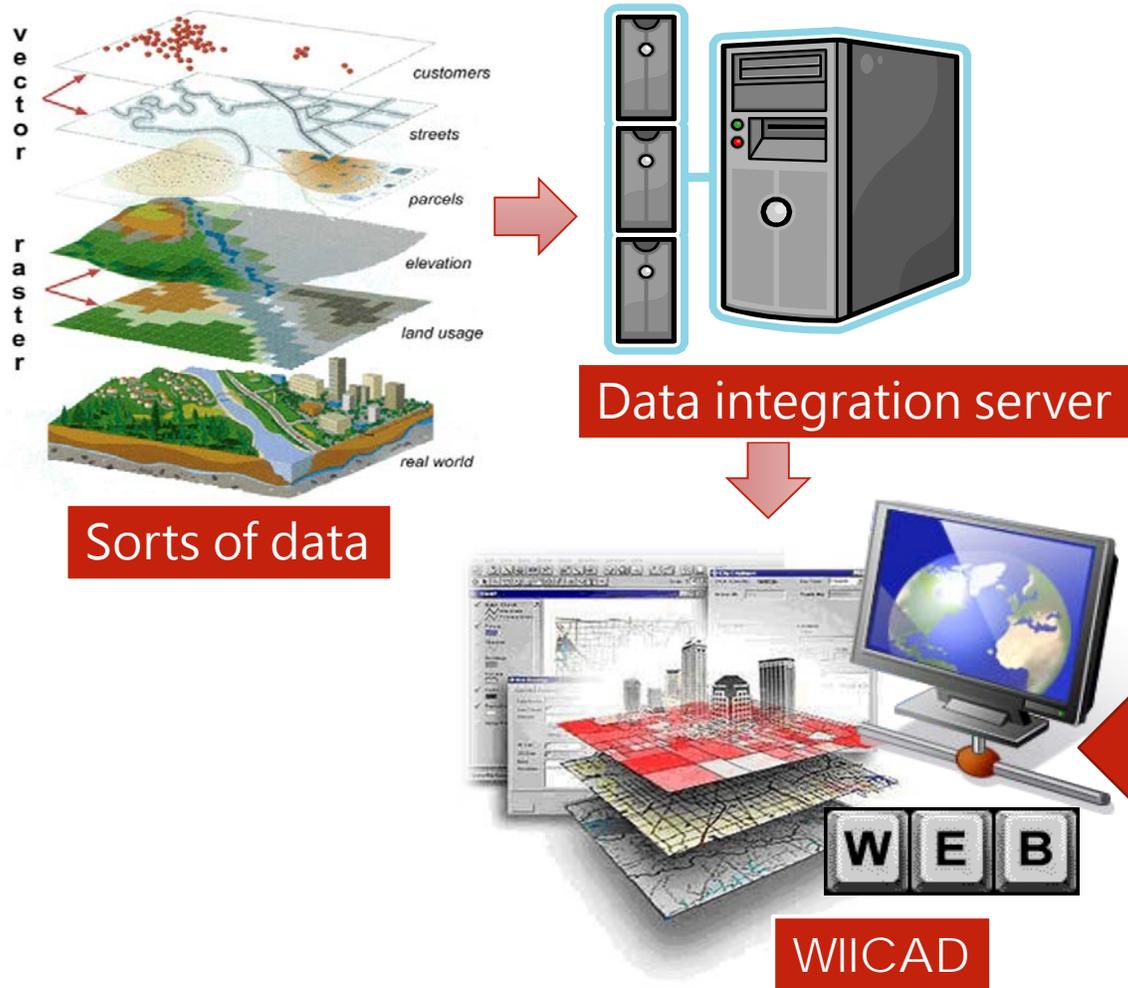
WIICAD

WEB-BASED IMAGE INTERACTIVE CHANGE AND DETECTION

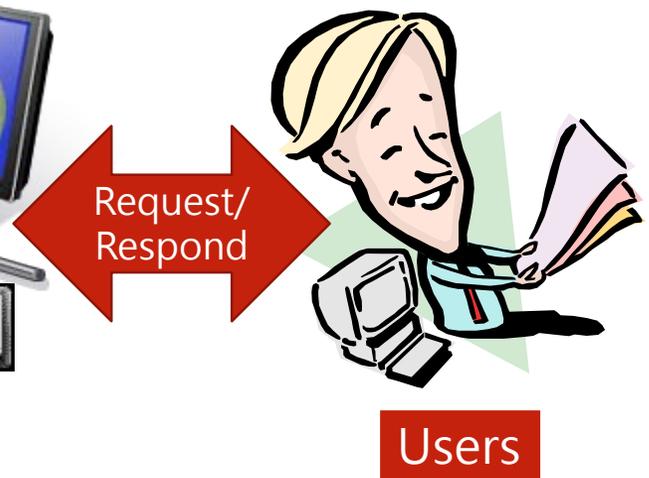
User Guide 2013

<http://www.wiicad.com.tw/>

INTRODUCTION



WIICAD is a data-integrated service platform. It links sorts of image data in the back end, providing users services such as research and comparison of ground features in different periods. Users can also use manual and automatic change detection analysis to manage multi-period land change as references for later decision making in national policy.

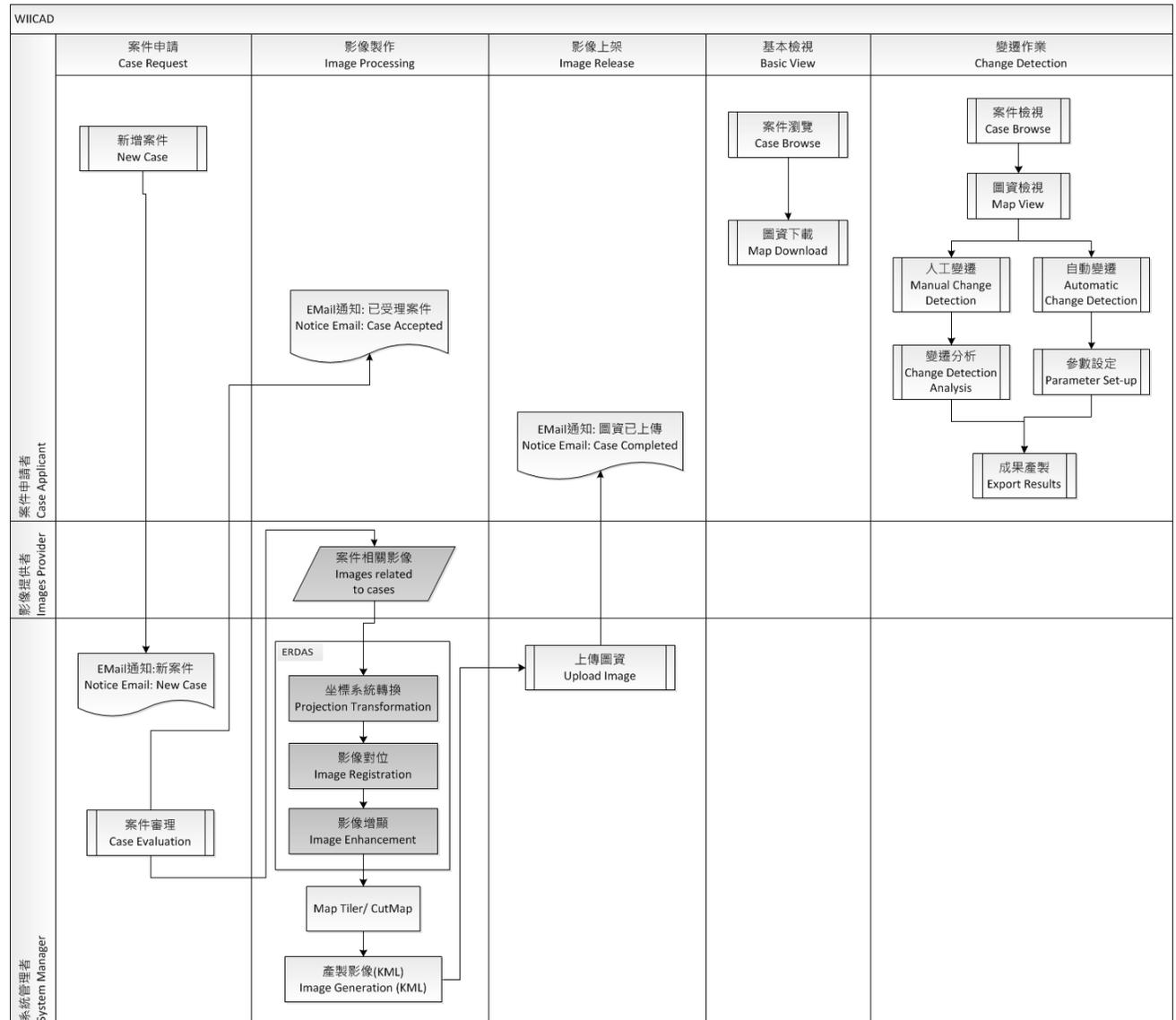


SYSTEM PROCESS

General users can apply more access in using this system and become advanced users.

The authorized users can apply for image data by specific case. The system managers will base on the capability and produce image data to meet users' requirement.

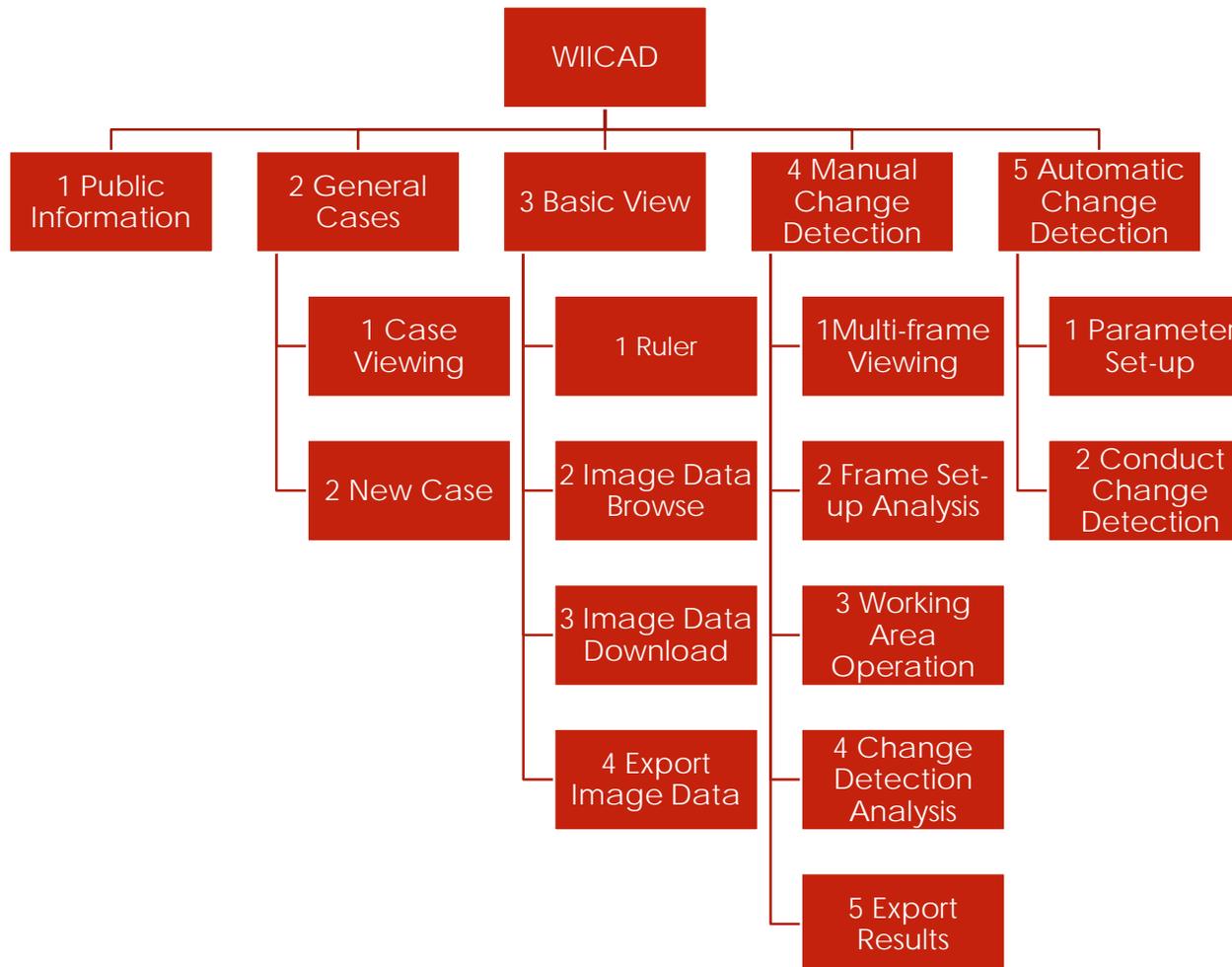
For advanced users, this system provides manual and automatic change detection analysis as references for later decision making.



SYSTEM STRUCTURE

This system is divided into 5 models according to user access and purpose:

1. Public information
 - General users
 - To view multi-period image about important incidents
2. General Cases
 - System users who has access in using the system
 - Users can apply and manage image data relating to cases
3. Basic View
 - System users who has access in using the system
 - View and download image data relating to cases
4. Manual Change Detection
 - System users who has access in using the system
 - To conduct change detection analysis in the interested areas
5. Automatic Change Detection
 - System users who has access in using the system
 - System will produce automatic change detection analysis based on parameters



SYSTEM INSTRUCTION

0 Home Page



LOGIN

System users who has access in using the system can log in account and password to enter the system

The screenshot shows the WIICAD website interface. At the top right, there are navigation buttons: '中 文' (Chinese/English version), 'ABOUT', and 'MANUAL'. Below these are 'Contact us' and 'Download instruction' callouts. The main header features the 'WIICAD' logo and the text 'Web-Based Image Interactive Change and Detection' and '線上互動式影像變遷偵測平台'. The login section includes a user account input field, a password input field, and a 'LOGIN' button. Below the login fields is a 'Latest news' section with a date '02/18/2013' and the text 'New WIICAD Released'. The bottom section displays three circular images: '2010 Landslide', '2010 Landslide', and '2011 Earthquake', with a callout 'Information of Environment Monitoring Released'. The footer contains copyright information for GIS Lab. of Center for Space and Remote Sensing Research National Central University.

Chinese/English version

Contact us

Download instruction

WIICAD

Web-Based Image Interactive Change and Detection
線上互動式影像變遷偵測平台

Enter user account

Enter user password

Log in system

Latest news

02/18/2013 New WIICAD Released

2010 Landslide

2010 Landslide

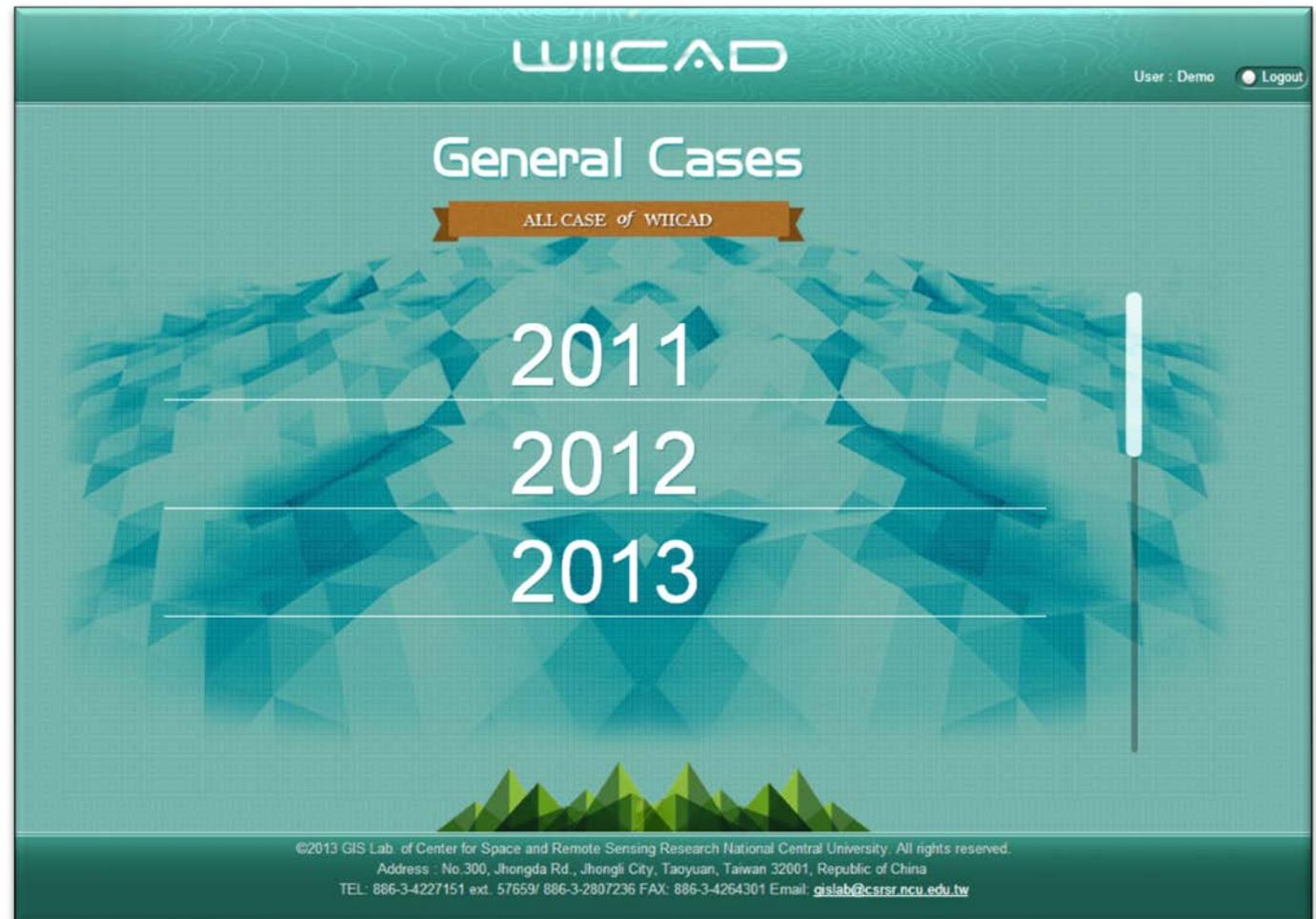
2011 Earthquake

Information of Environment Monitoring Released

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MAIN MENU

After logging in, users can view cases by year



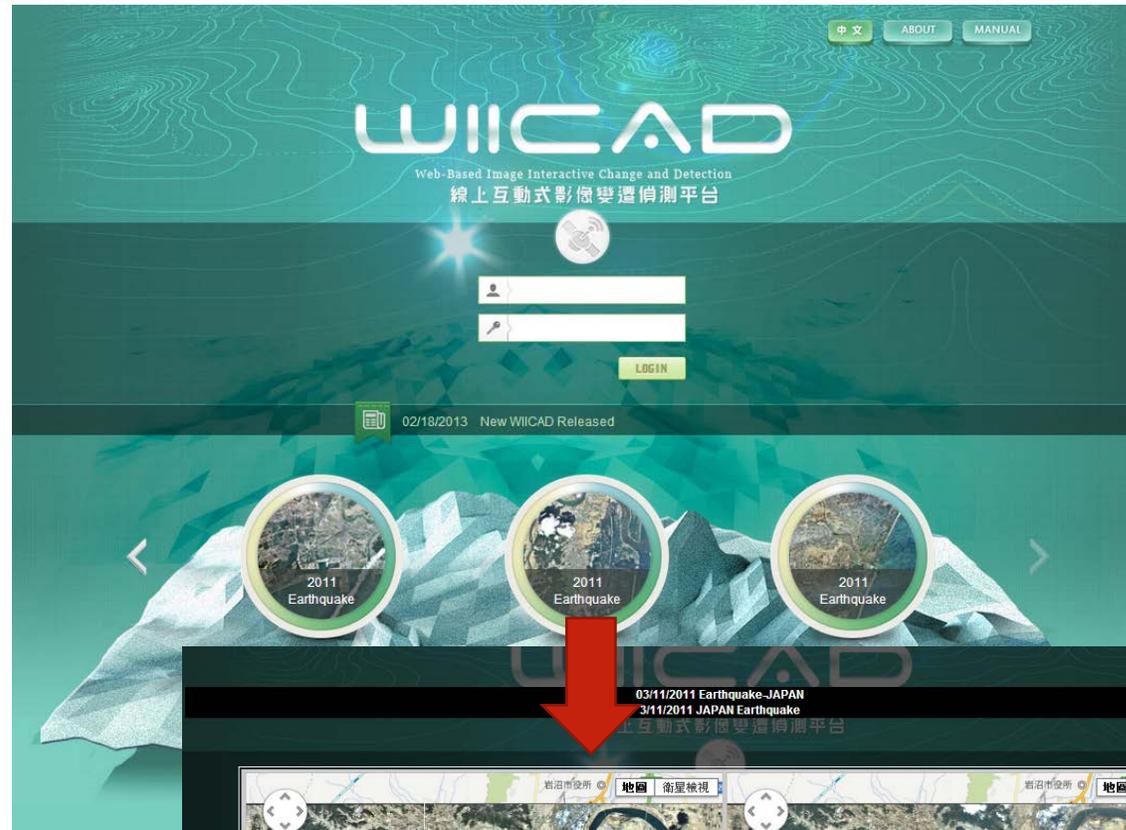
SYSTEM INSTRUCTION(1/7)

1 Public Information

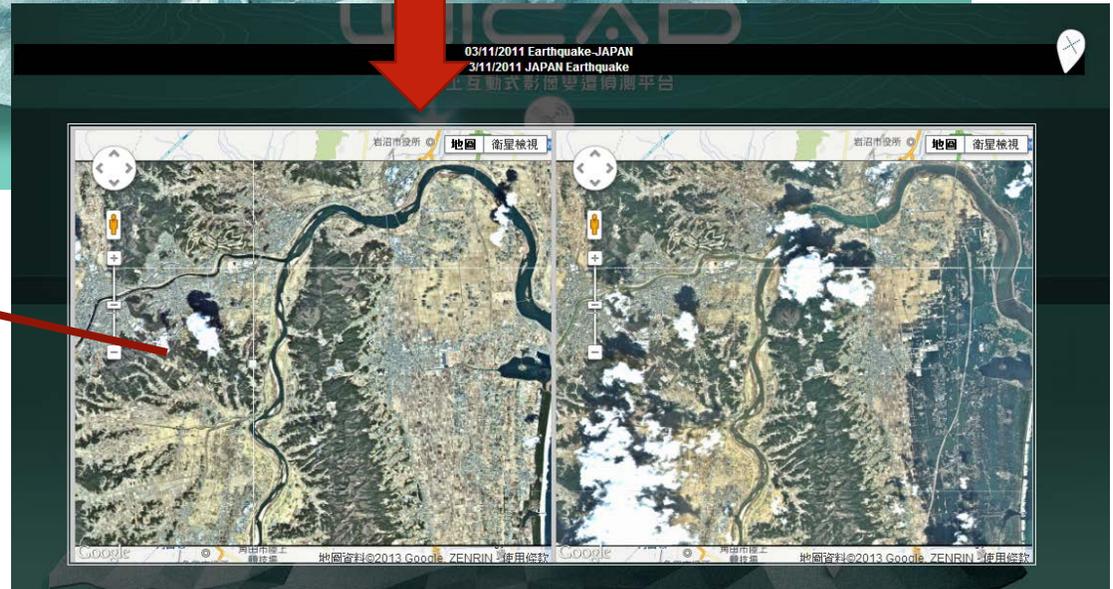


PUBLIC INFORMATION

General users can choose open cases and information relating to environmental monitoring, and view different period of time in the same area on the main page



03/11/2011
 Earthquake in Japan
 the Great East Japan
 Earthquake
 Natori city, Miyagi
 prefecture





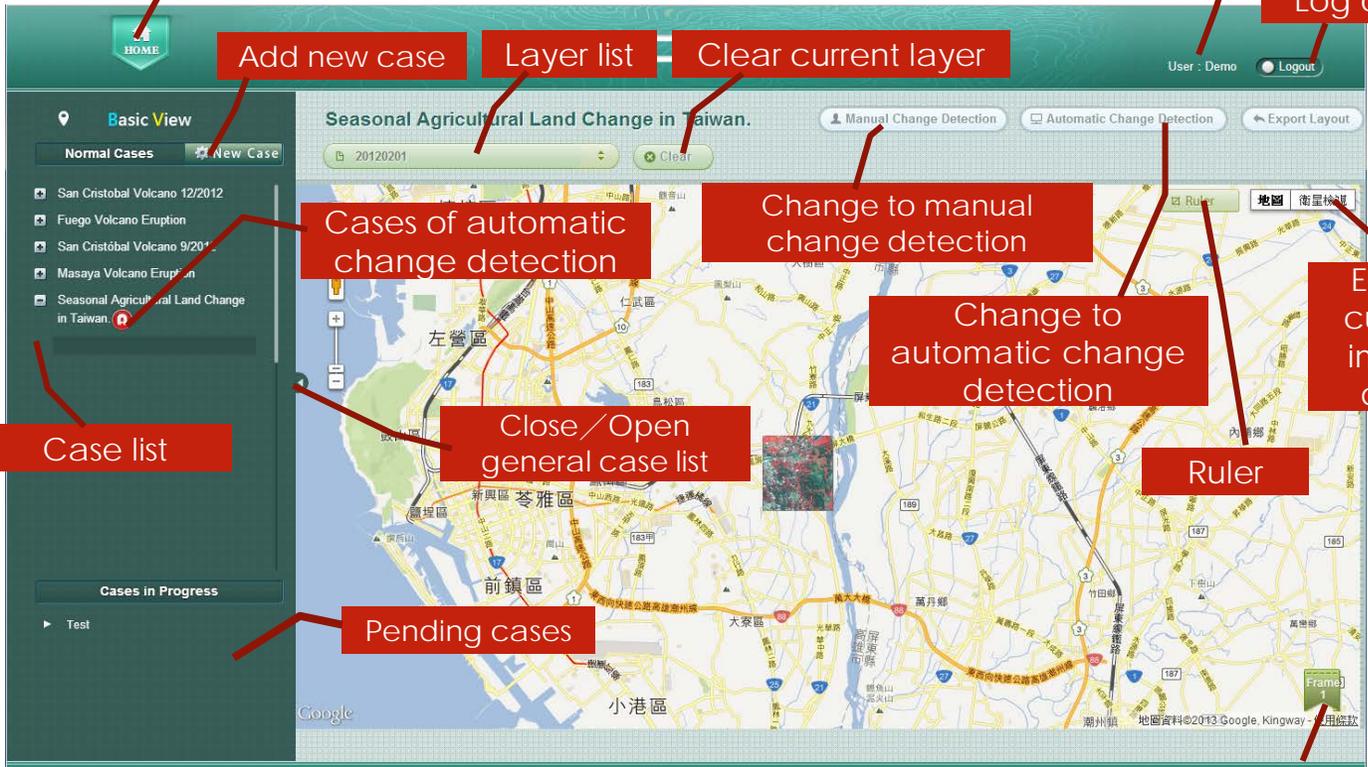
SYSTEM INSTRUCTION(2/7)

2 General Cases

2.1 CASE VIEW

General and pending cases are both included in the Case list.

-  Close or open general Case list.
-  To open Case list: Users can click on the icon and open Case list in details. The selected case will be displayed in layers.
-  To close Case list: Users can click on the icon and close the Case list.
-  To display image data which matches automatic change detection and to automatically analyze.



The screenshot shows the 'Basic View' of the GIS application. The interface includes a top navigation bar with a 'HOME' button, a 'Current user' display (User: Demo), and a 'Log out' button. Below the navigation bar are buttons for 'Add new case', 'Layer list', and 'Clear current layer'. The main content area features a map titled 'Seasonal Agricultural Land Change in Taiwan' with a date selector set to '20120201' and a 'Clear' button. The map has two tabs: 'Manual Change Detection' and 'Automatic Change Detection'. A 'Ruler' tool is visible on the right side of the map. The left sidebar contains a 'Case list' section with a 'New Case' button and a list of cases, including 'San Cristobal Volcano 12/2012', 'Fuego Volcano Eruption', 'San Cristóbal Volcano 9/2012', 'Masaya Volcano Eruption', and 'Seasonal Agricultural Land Change in Taiwan'. Below this is a 'Cases in Progress' section with a 'Test' button. At the bottom right, there is a 'Frame number' display showing '1'. The footer contains copyright information for the GIS Lab at National Central University.

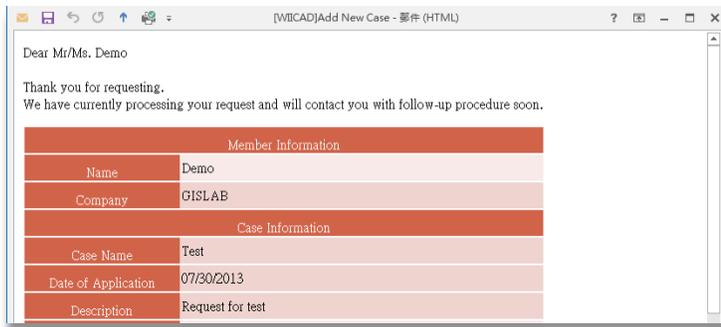
2.2 NEW CASE(1/2)

Users can base on their requirements to apply new case by clicking on New Case button:

Blanks with * can not be blank.

-  Map locating tool: users can move, locate with points or frames to indicate the applying area.
- When all information are filled in, click on the Submit button to complete case application.

2.2 NEW CASE(2/2): EMAILS OF CASE PROGRESS NOTIFICATION



Case Request

After receiving a case request, the system will automatically send a notice email to reply the applicant and system manager for further notice in the procedure.



Case Request — Response

System manager will review the application and evaluate the possibility of producing image data. The result and progress of the case will send to the applicant via email.



Case Request — Completed

When the case is received and under processing, the system manager will produce image data based on applicant's requirement. The system will send a notice email to the applicant after the data is completed.



SYSTEM INSTRUCTION(3/7)

3 Basic View



3.1 RULER

Users can click on the Ruler button with left click on the mouse to start drawing the path on the map for measurement. The total path distance will be shown in the Ruler toolbox:

To start a new measurement, click on the Clear button and draw again. To close the Ruler toolbox, click on the Close button.

The screenshot displays the WIICAD web application interface. The top navigation bar features the WIICAD logo and a user profile section with 'User: Demo' and a 'Logout' button. The main interface is divided into several sections:

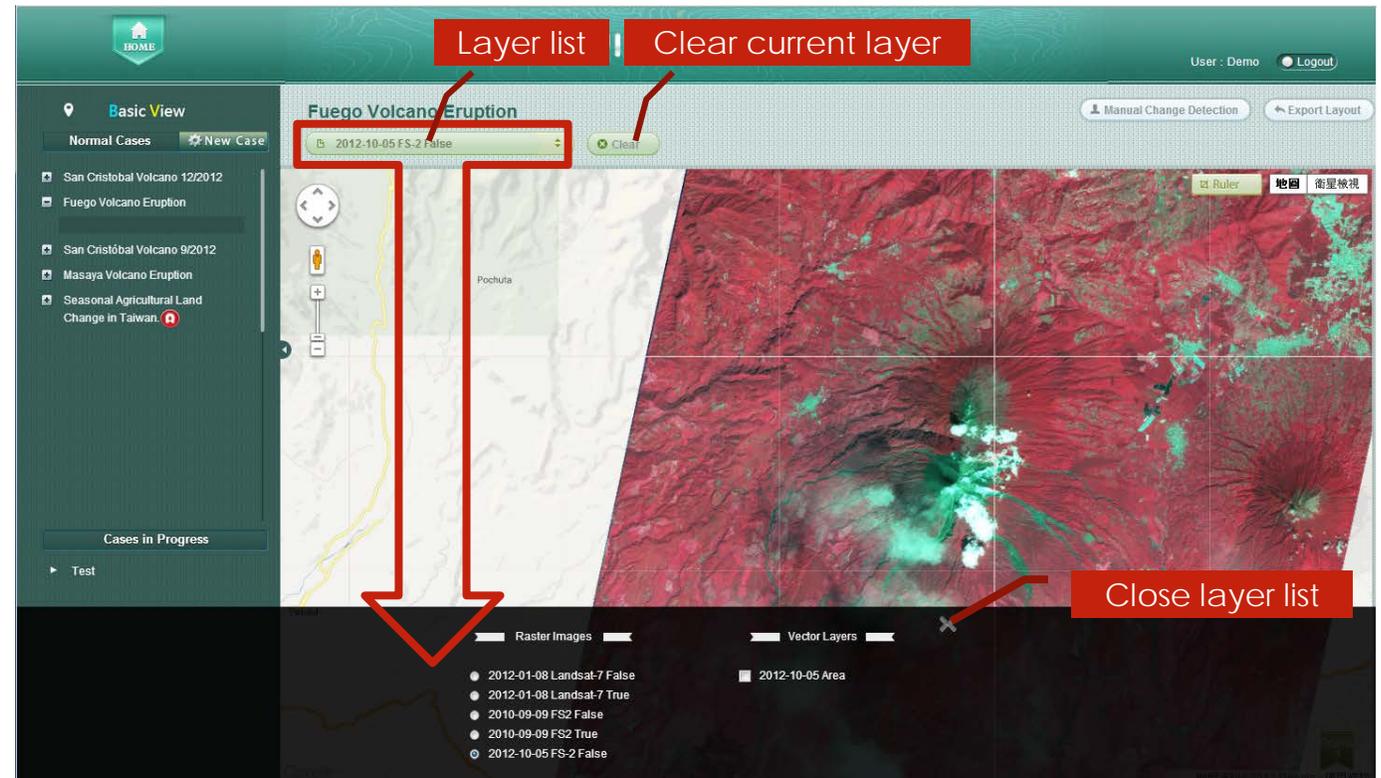
- Left Sidebar:** Contains a 'Basic View' section with a 'Normal Cases' tab and a 'New Case' button. Below this is a list of cases, including 'San Cristobal Volcano 12/2012', 'Fuego Volcano Eruption', 'San Cristóbal Volcano 9/2012', 'Masaya Volcano Eruption', and 'Seasonal Agricultural Land Change in Taiwan'. At the bottom of the sidebar is a 'Cases in Progress' section with a 'Test' button.
- Main Map Area:** Displays a satellite map of San Cristobal Volcano. A red line is drawn on the map, indicating a measurement path. The map is titled 'San Cristobal Volcano 12/2012' and includes a 'Clear' button. The map is powered by Google Earth, as indicated by the 'Google' logo and '地圖資料©2013 Google - 使用條款' text.
- Ruler Toolbox:** A floating window titled 'Ruler' is overlaid on the map. It displays the measured distance as 'Distance: 14.590 km' and includes 'Clear' and 'Close' buttons. A red box highlights the 'Ruler' button in the top right corner of the map area, with an arrow pointing to the toolbox.

At the bottom of the interface, there is a copyright notice: '©2013 GIS Lab. of Center for Space and Remote Sensing Research National Central University. All rights reserved. Address: No.300, Zhongda Rd., Jhongli City, Taoyuan, Taiwan 32001, Republic of China. TEL: 886-3-4227151 ext. 57659/ 886-3-2807236 FAX: 886-3-4264301 Email: gislab@csr.nctu.edu.tw'.

3.2 IMAGE DATA VIEW

After click on the layer list, users can view the data by selecting and adding layers in the working area at the bottom of the screen.

- Raster Images : single select
- Vector Layers : multi select



3.3 DOWNLOAD

If the viewing image data is available to download, users can save it as jpeg files.

The screenshot displays the WIICAD web application interface. The main map shows the San Cristobal Volcano area with a red rectangular region of interest. A satellite image of this region is shown in a larger view on the right, with a red box and arrow pointing to a 'Download' button. The interface includes a sidebar with a 'Basic View' section and a list of cases, including 'San Cristobal Volcano 12/2012'. The top navigation bar features a 'HOME' button, the 'WIICAD' logo, and user information 'User: Demo' with a 'Logout' link. The bottom of the page contains copyright information for GIS Lab at National Central University.

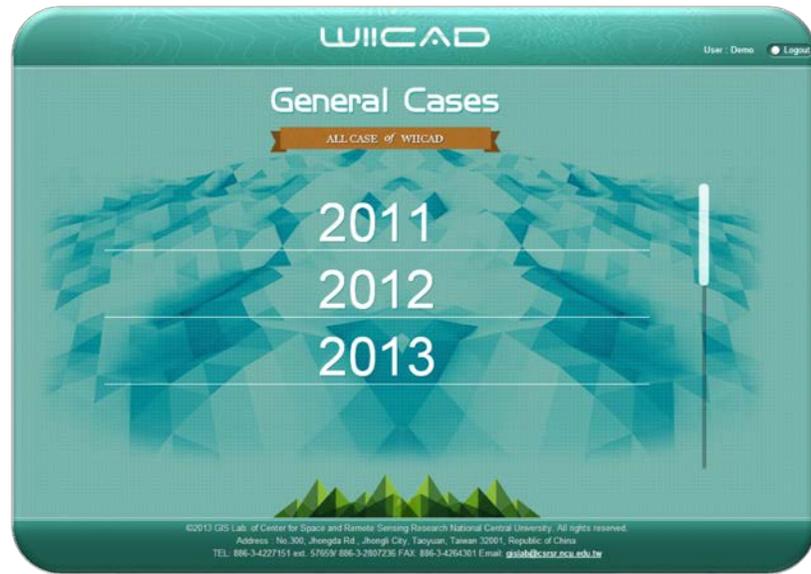
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3.4 EXPORT LAYERS

Users can export and print out current viewing data in an excel format.

If current viewing data is multi-framing, users can select and export 2 frames at the same time.

The screenshot illustrates the 'Export Layout' functionality in the WIICAD application. The main interface shows a map of San Cristobal Volcano with a green selection box. A dialog box prompts the user to 'Please select two frame for layout', offering 'Frame1', 'Frame2', and 'Frame3' for selection. A red arrow indicates the flow from the 'Export Layout' button to the dialog box. Below the dialog box, two side-by-side map frames labeled 'Prior image' and 'Subsequent image' are shown, representing the selected frames. A red arrow points from these frames to a third map frame labeled 'Map', which shows the selected area with a yellow overlay. The bottom of the interface contains copyright information for the Center for Space and Remote Sensing Research at National Central University.



SYSTEM INSTRUCTION(4/7)

4 Manual Change Detection



4.1 MULTI-FRAME VIEWING

To compare and observe change areas, users can click on the interested case and select image data in different period of time or types of data in two separated frames.

The image displays two screenshots of the WIICAD web application interface, illustrating multi-frame viewing capabilities. The top screenshot shows the 'Seasonal Agricultural Land Change in Taiwan' view, and the bottom screenshot shows the 'Fuego Volcano Eruption' view.

Top Screenshot (Seasonal Agricultural Land Change in Taiwan):

- Home page:** Located at the top left of the interface.
- New a Case:** A button located below the Home page link.
- Current user:** Located at the top right, showing 'User: Demo'.
- Log out:** A button located next to the current user information.
- Case list:** A sidebar on the left containing a list of cases, including 'San Cristobal Volcano 12/2012', 'Fuego Volcano Eruption', and 'Seasonal Agricultural Land Change in Taiwan'.
- Change to Basic View:** A button located in the top right toolbar.
- Change to Automatic Change Detection:** A button located in the top right toolbar.
- Export current data:** A button located in the top right toolbar.
- New a Map Frame:** A button located in the top right toolbar.
- Close/Open general case list:** A button located in the top right toolbar.
- Pending cases:** A section in the sidebar labeled 'Cases in Progress'.
- Frame Number:** Two labels pointing to the frame number input fields above the map.

Bottom Screenshot (Fuego Volcano Eruption):

- Layer list:** A dropdown menu located in the top left of the map area.
- Clear current layer:** A button located next to the layer list dropdown.
- Close layer list:** A button located at the bottom right of the interface.
- Raster Images:** A section at the bottom of the interface showing a list of image data, including '2012-01-08 Landsat-7 True', '2012-01-08 Landsat-7 False', '2010-09-09 FS2 False', '2010-09-09 FS2 True', and '2012-10-05 FS-2 False'.
- Vector Layers:** A section at the bottom of the interface showing a list of vector layers, including '2012-10-05 Area'.

4.2 FRAMING SET-UP ANALYSIS



New Map Frame : Users can add new map frame according to their requirement.



Close Map Frame: Users can close map frames which no longer needs analysis.



Frame number: Every map frame will automatically have a frame number.

The screenshot displays the WIICAD web application interface. On the left, a sidebar contains a 'Manual Change Detection' section with 'Normal Cases' and 'New Case' buttons, and a 'Cases in Progress' section with two 'Test' entries. The main area shows a satellite map with two map frames overlaid. The left frame is labeled 'Frame 1' and the right frame is labeled 'Frame 2'. A red callout box labeled 'Add new map frame' points to a 'New Map Frame' button in the top right corner. Another red callout box labeled 'Close map frame' points to a close icon (an 'x' in a circle) on the top left of the left map frame. Two red callout boxes labeled 'Frame number' point to the labels 'Frame 1' and 'Frame 2' at the bottom of their respective frames. The interface also includes a 'HOME' button, a 'User: Demo' profile, a 'Logout' button, and various map controls like 'Unlock', 'Ruler', and '衛星檢視' (Satellite View).

Unlock frame and set up as working area to conduct change detection analysis.

4.3 WORKING AREA

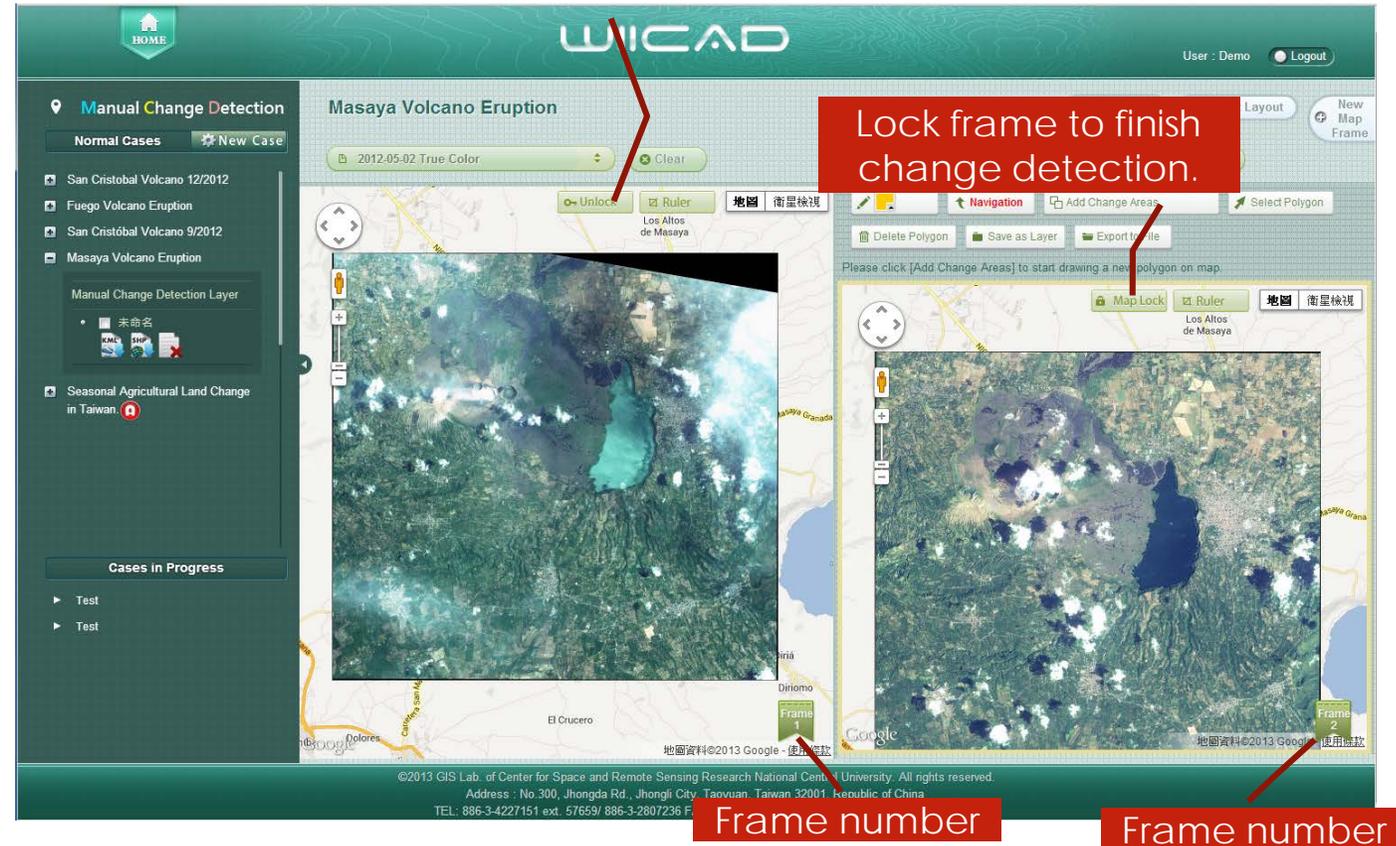
All new map frame will automatically have numbers. The status of frames can also be set up as:

- (1) Unlock (working) frame: can be edited ;
- (2) Locked frame: viewing only

Users can based on their requirement and decide the function.

All frames are defaulted as locked frames and not able to be edited. If users would like to edit in specific frames, click on the  button.

After the analysis, users can lock frames by clicking on the  button.



The screenshot displays the WICAD web application interface. At the top, there is a 'HOME' button and the WICAD logo. The user is logged in as 'Demo'. The main content area is titled 'Masaya Volcano Eruption' and shows a satellite map with a change detection overlay. The interface includes a sidebar on the left with 'Manual Change Detection' and 'Cases in Progress' sections. The main map area has a toolbar with buttons for 'Unlock', 'Map Lock', 'Ruler', 'Navigation', 'Add Change Areas', and 'Export to File'. Two map frames are visible, labeled 'Frame 1' and 'Frame 2'. Red callout boxes highlight the 'Unlock' button, the 'Map Lock' button, and the 'Frame 1' and 'Frame 2' labels.

Lock frame to finish change detection.

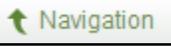
Frame number

Frame number

4.4 CHANGE DETECTION ANALYSIS

When frames are set up as unlock working) frame, the analysis tool bar will show up:

 Polygon colors.

 Change to navigation mode.

 Start drawing polygon of the change areas. Users can click on the map and start drawing. To finish drawing, right click on the mouse.

 Select polygon. Users can click on the change areas. The selected area will show in yellow.

 To delete polygon, first click outside the selected area, then click on delete current area.



The screenshot displays the WIICAD web application interface for Manual Change Detection. The main map area shows the Masaya Volcano Eruption with two frames: '2012-05-02 True Color' and '2012-02-20 True Color'. A toolbar at the top contains icons for 'Unlock', 'Ruler', 'Navigation', 'Add Change Areas', and 'Select Polygon'. A red box highlights the 'Add Change Areas' icon, with a red arrow pointing to a color selection dialog box. The dialog box shows a color gradient bar and a 'new' color selection area. A red box at the bottom of the dialog says 'Set up colors to draw'.

4.5 EXPORT RESULTS

When change detection analysis complete, users can save the results for later analysis and application.

 Save as Layer Save the analysis results as layers.

 Download and save as Shape file

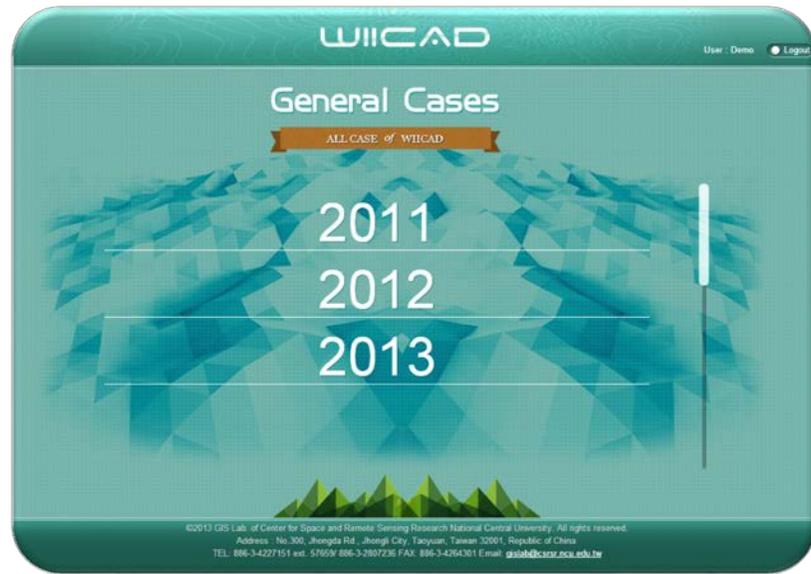
 Download and save as KML file

 Delete result layer

 Export to File Save the analysis results in users' computer. The files can be saved as either Shape file or KML file.



The screenshot displays the WIICAD web application interface. The main map area shows two satellite images of the Masaya Volcano area, with yellow polygons highlighting detected changes. The interface includes a sidebar with 'Manual Change Detection' and 'Normal Cases' lists, a main map area with two satellite images from 2012-05-02 and 2012-02-20, and a right-hand toolbar with options like 'Export to File', 'Save as Layer', 'Delete Polygon', and 'Navigation'. A red arrow points from the 'Export to File' button to a dialog box titled 'Please enter the name of detection result.' with an input field containing 'untitled'. Another red arrow points from the 'Save as Layer' button to a dialog box titled 'Save as Layers (Name the layers)'. A third red arrow points from the 'Export to File' button to a file explorer window showing a folder structure with files like 'Kml(*.kml)' and 'Shp(*.zip)'.



SYSTEM INSTRUCTION(5/7)

5 Automatic Change Detection

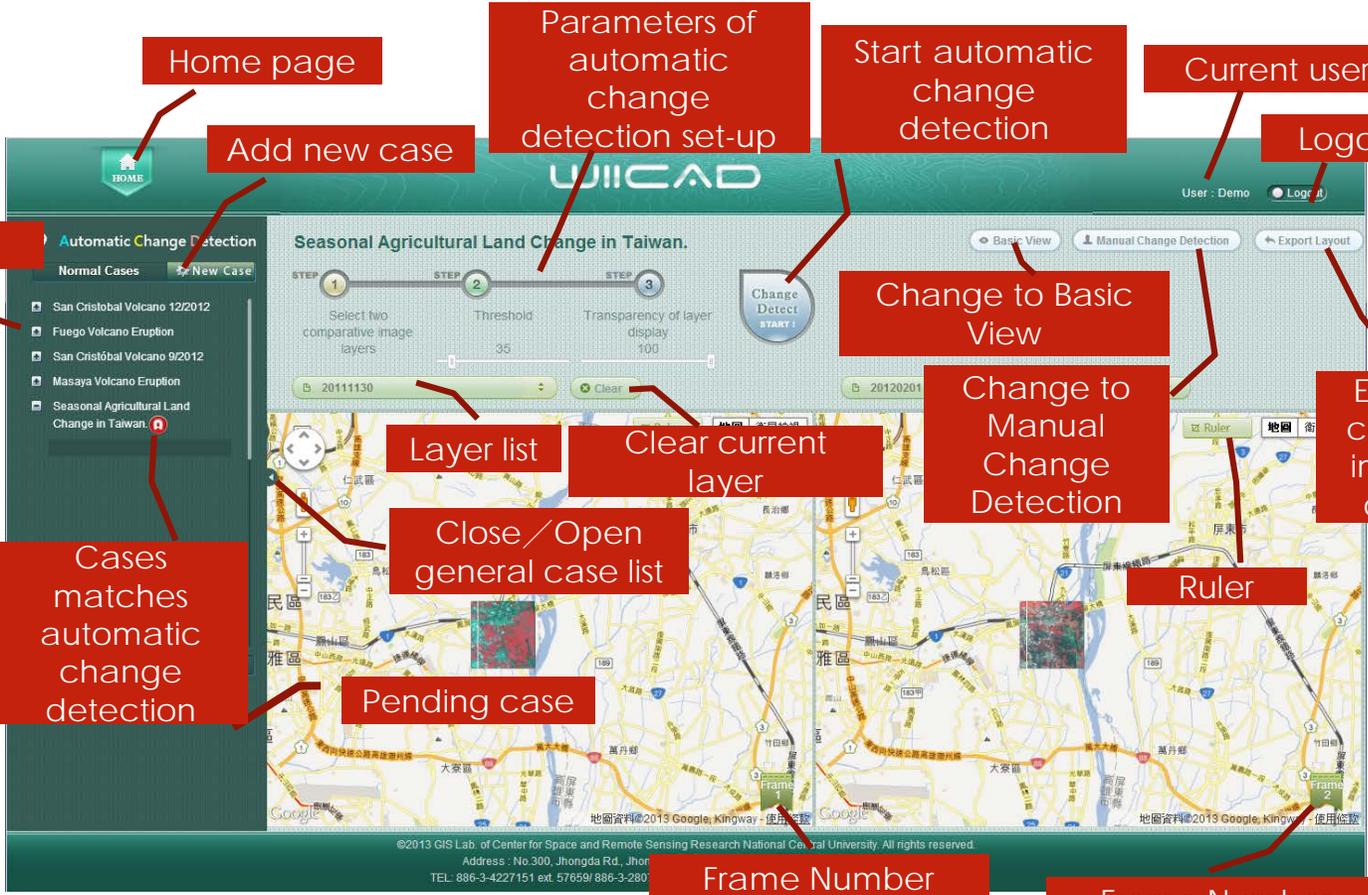


5.1 PARAMETER SET-UP

 indicates image data of the cases that matches and can be conducted in automatic change detection analysis.

Users can follow the instructions to set up parameters:

1. Select a case in the case list.
2. Set up two image data in different period of time in map frames.
3. Assign threshold in the automatic change detection.
4. Set up transparency for data result in order to view multi-framing image.
5. Click on the Change Detect Start button.
6. Users can interpret results and adjust parameters according to the requirements.



Home page

Add new case

Parameters of automatic change detection set-up

Start automatic change detection

Current user

Logout

Case list

Automatic Change Detection

Normal Cases

New Case

San Cristobal Volcano 12/2012

Fuego Volcano Eruption

San Cristóbal Volcano 9/2012

Masaya Volcano Eruption

Seasonal Agricultural Land Change in Taiwan. 

Basic View

Manual Change Detection

Export Layout

Change Detect START!

Change to Basic View

Change to Manual Change Detection

Export current image data

Layer list

Clear current layer

Close/Open general case list

Ruler

Cases matches automatic change detection

Pending case

Frame Number

Frame Number

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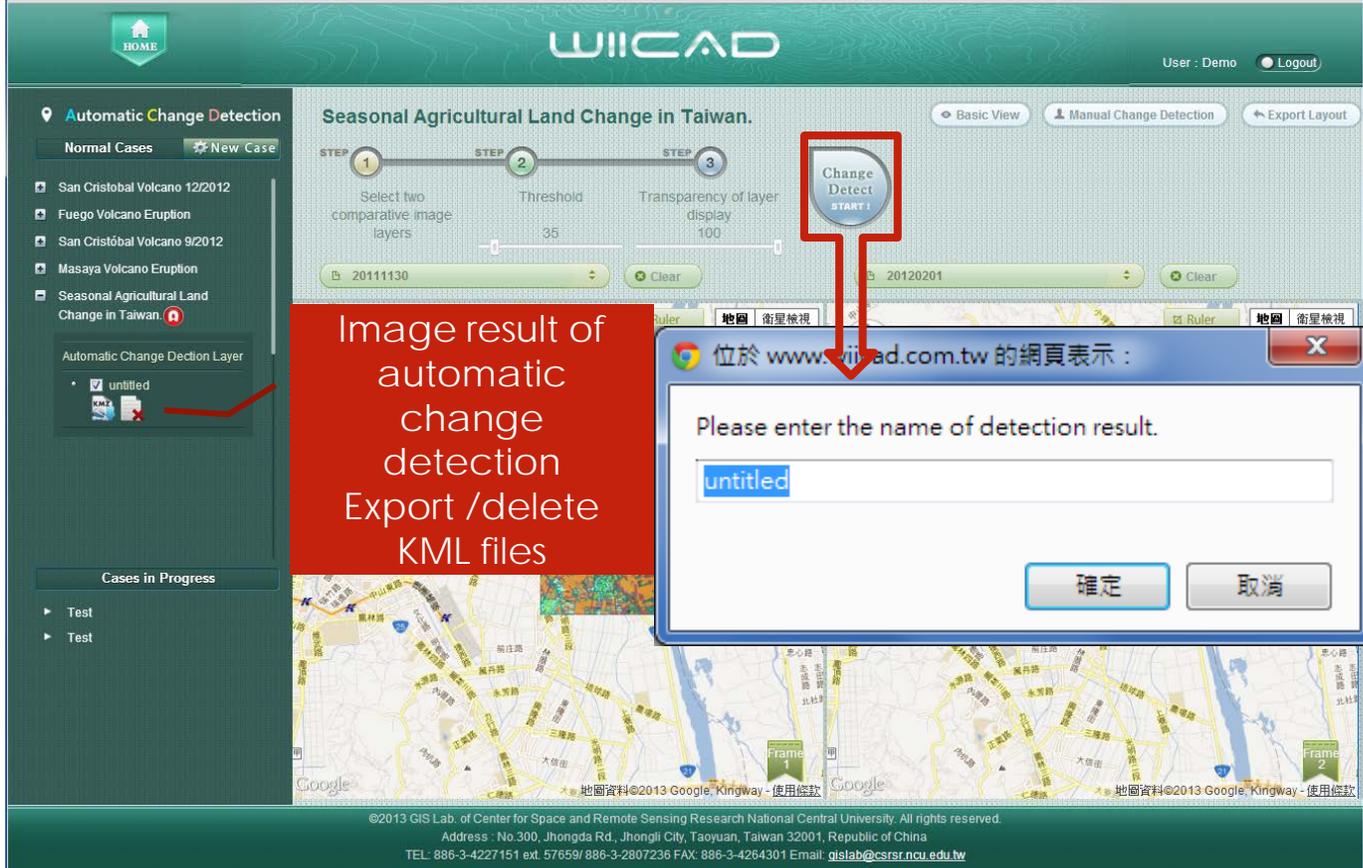
5.2 CONDUCT CHANGE DETECTION

When completing automatic change detection, the system will ask users whether to save the results or not and name the file accordingly.

If users decide to save the results, there will be a new-added layer named Automatic Change Detection Layer and appear in the case list.

 Download automatic change detection as zip file (KMZ) to users' computer.

 Delete automatic change detection layer.



The screenshot displays the WIICAD web application interface. The main title is "Seasonal Agricultural Land Change in Taiwan." The interface includes a sidebar with "Automatic Change Detection" and "Normal Cases" (listing various volcanic eruptions). The main panel shows a three-step process: STEP 1 (Select two comparative image layers), STEP 2 (Threshold, set to 35), and STEP 3 (Transparency of layer display, set to 100). A "Change Detect START!" button is highlighted with a red box. Below the process, there are input fields for dates (20111130 and 20120201) and "Clear" buttons. A red arrow points from the "Change Detect START!" button to a red text box that reads: "Image result of automatic change detection Export /delete KML files". A dialog box is open, asking "Please enter the name of detection result." with the text "untitled" in the input field. The dialog has "確定" (OK) and "取消" (Cancel) buttons. The bottom of the interface shows a Google Map and footer information: "©2013 GIS Lab. of Center for Space and Remote Sensing Research National Central University. All rights reserved. Address : No 300, Jhongda Rd., Jhongli City, Taoyuan, Taiwan 32001, Republic of China TEL: 886-3-4227151 ext. 57659/ 886-3-2807236 FAX: 886-3-4264301 Email: gislab@csr.rtcu.edu.tw".

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