

SWAN (Surface waves analysis)



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1 System Requirements

The minimum system requirements for SWAN are moderate compared to typical modern computer hardware. It is possible to repurpose an old computer to run SWAN. SWAN runs on this operating systems: Windows 2000, Windows XP, Windows Vista and Windows 7.

SWAN can run on a PC with Windows 2000 as OS, a 1 GHz Pentium 3 as CPU, 256MB as RAM. The hard drive needs to have less then 100MB available to let install SWAN, and to save raw data and processed output files. There are no special requirements on the video, audio, network cards or on other devices. It is only necessary the use of an USB port to plug the security dongle while SWAN is running.

The previous can be considered the minimum requisite, but for a more comfortable use of the software any modern computer is suggested.

2 End user Licence Agreement

Geostudi Astier srl

Software License Agreement for: SWAN Surface waves analysis.

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13. GOVERNING LAW. Any action related to this Agreement will be governed by Nevada law and controlling U.S. federal law. No choice of law rules of any jurisdiction will apply.

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16. CONTACT. Contact the Developers at info@geoastier.it

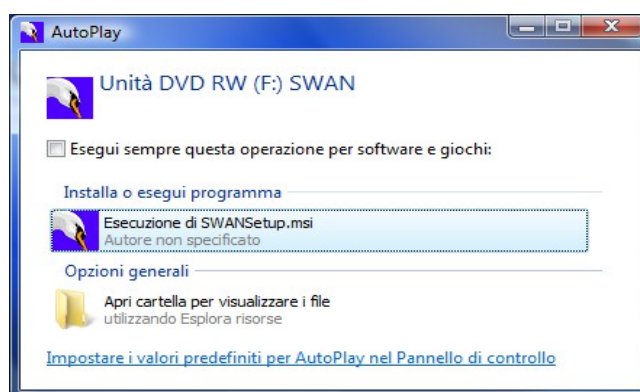
web: <http://www.geoastier.com>

info: info@geoastier.it

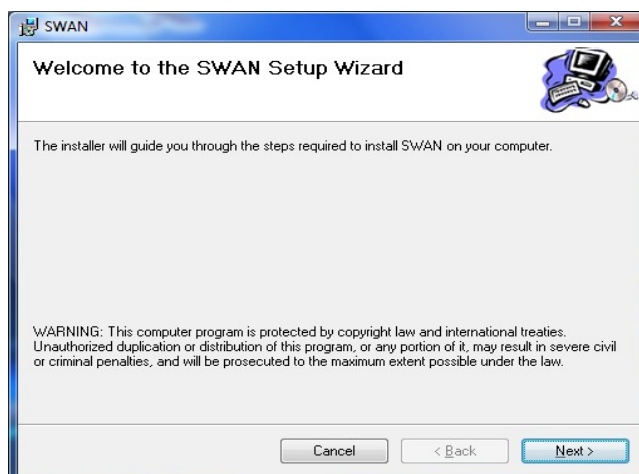
support: info@geoastier.it

3 The installation of the software

- Do not insert the USB dongle into the PC.
- It can be a good choice to close the other applications while running the setups.
- Insert the CD into the drive.
- Wait that the "Automatic Execution" (if enabled) starts the application.



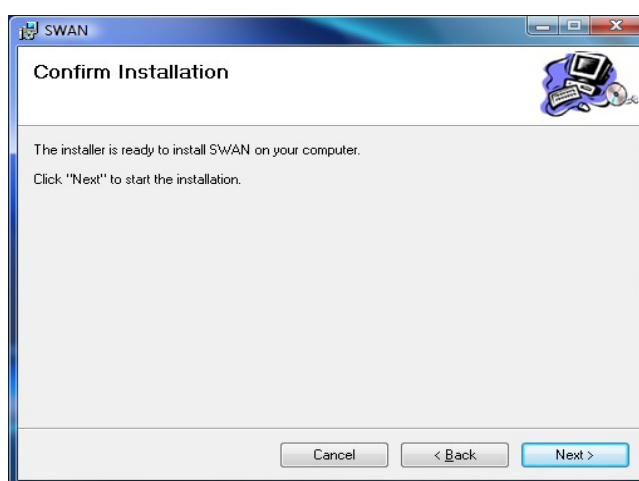
- If it is disabled run the application from the path "CDROM/SWAN_FULL/SWANSetup.msi" or "CDROM/SWAN_DEMO/SWANSetup.msi".
- If the setup file is available from other sources (like after a download from Internet) then execute it.
- Follow the instructions.
 - When the setup runs firstly advise the user that it is going to install a new software. Press "Next".



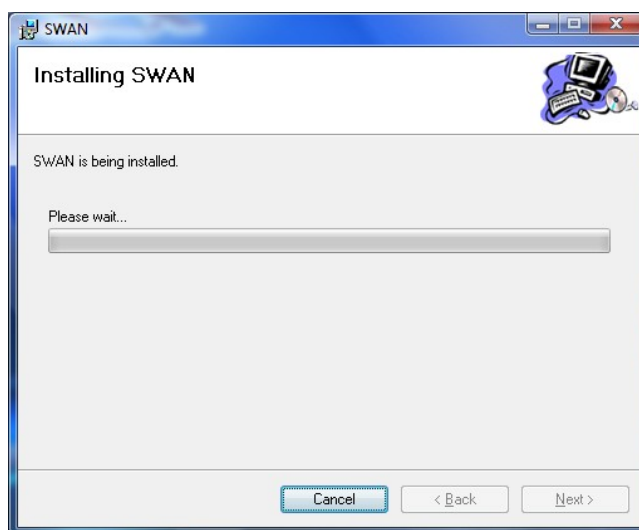
- Then it is asked to the user to choose the path where the program will be installed. It is also asked if the program has to be reachable from any user of that PC, or not. When done press "Next".



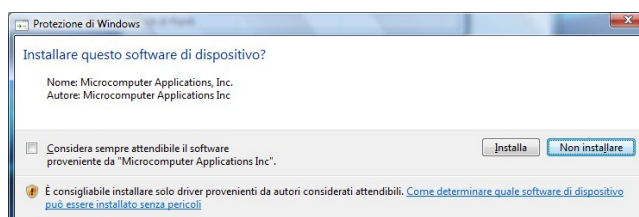
- Confirm that it is desired to proceed the installation pressing "Next" again.



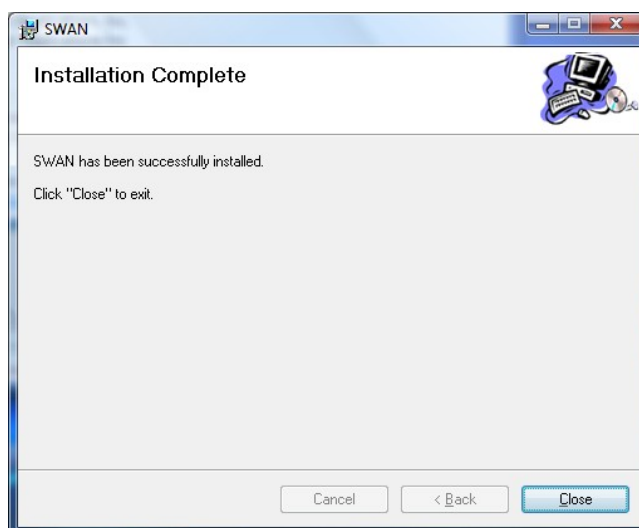
- A progress bar will be displayed to show the status of the installation.



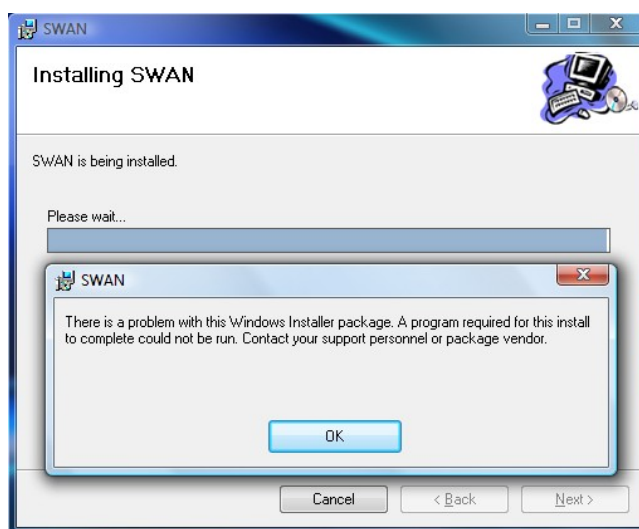
- During this process Windows can ask again to the user to confirm to install some software. In that case confirm to continue.



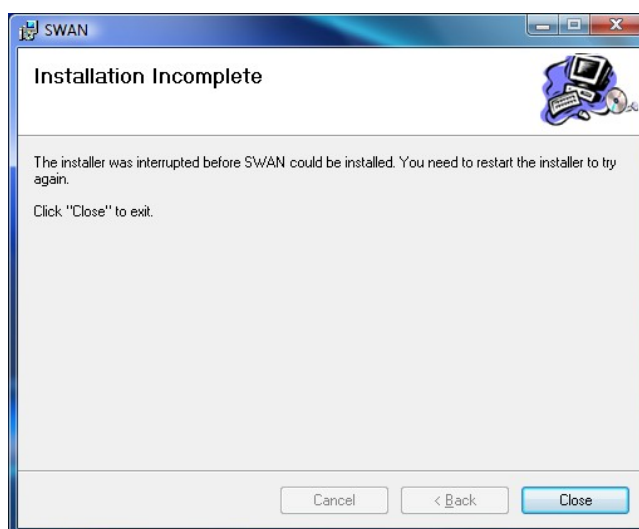
- After some seconds the Installation will be complete, and a message will say "SWAN has been successfully installed".



- If using Vista, and if UAC is enabled, then it is possible that some problems during the setup can occur.
 - If an error message is displayed the setup will be interrupt.



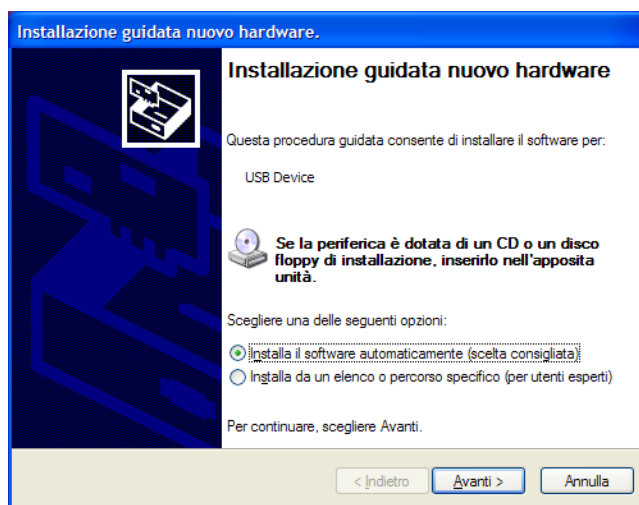
- Then the setup will end telling a message that the process is not completed and that suggests to try again.



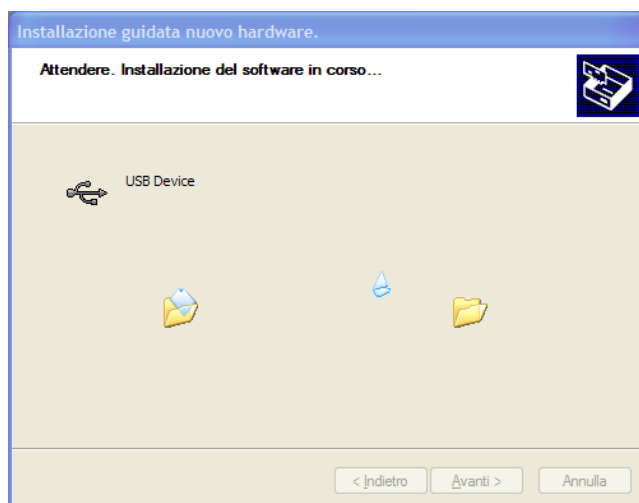
- In this case the problem can be solved by temporarily disabling the UAC to let the setup run free to store all the needed files into the system. (See instructions below to disable UAC)

4 The installation of the drivers of the USB dongle in the system

- This is necessary only for SWAN FULL.
- Insert the USB dongle into the desired port of the PC.
 - In case of Windows XP:
 - A window like the one shown can appear, then choose the automatic procedure.



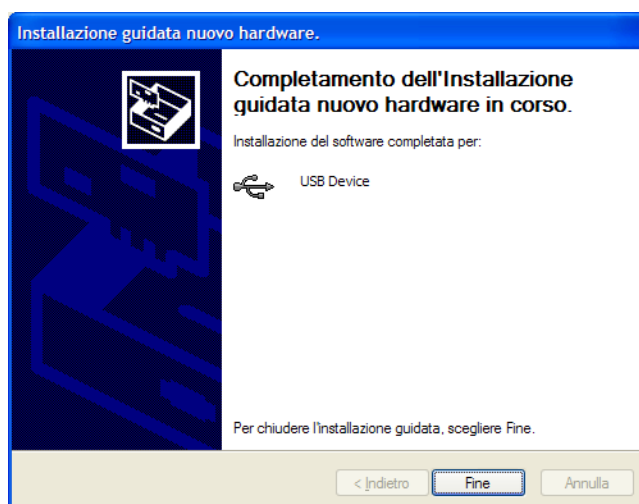
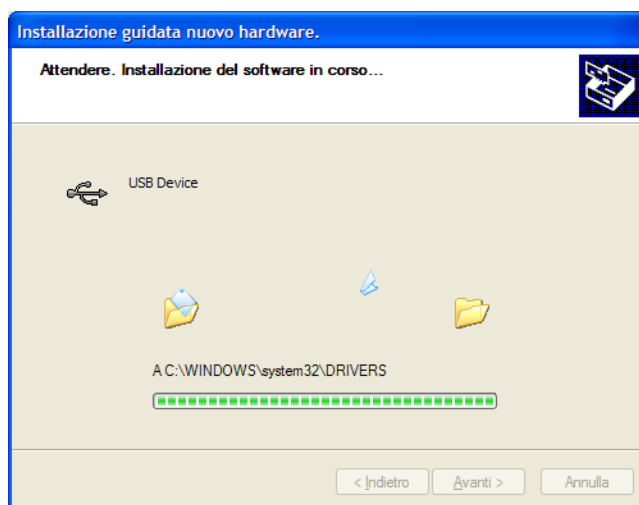
- Then will begin the drivers installation.



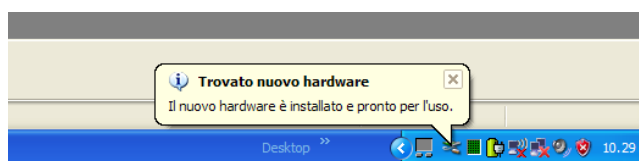
- It is possible that a warning message is displayed, then chose to continue the process.



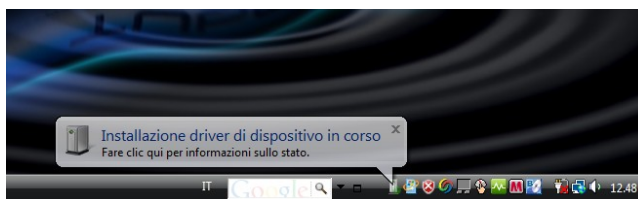
- After some seconds the process ends, then close the window.



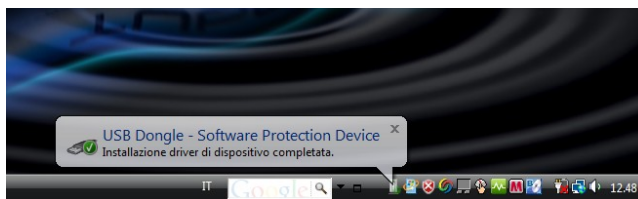
- It is displayed a popup message on bottom right of the screen, near the clock that tells that the procedure is complete.



- In case of Windows Vista and Windows 7:
 - The procedure is automatic, it is displayed a popup message on bottom right of the screen, near the clock.



- After some seconds the popup message is updated telling that the procedure is complete.



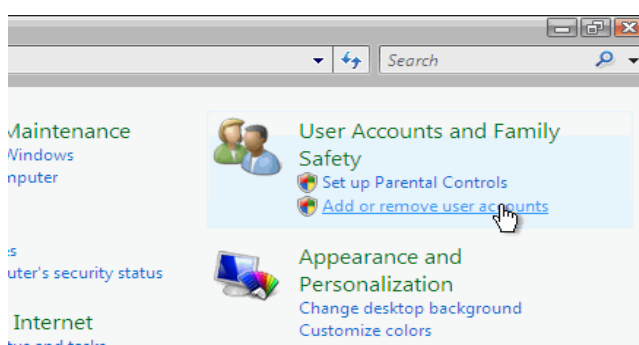
- It can be necessary to disable the UAC to complete successfully this phase.
- It is possible that this process needs to be repeated if the dongle is inserted on another USB port. In this case it can be useful to repeat this procedure for all the USB port of the PC.
- Run the previous steps only one time. They needs to be repeated only if SWAN will be un-installed.

5 Run SWAN

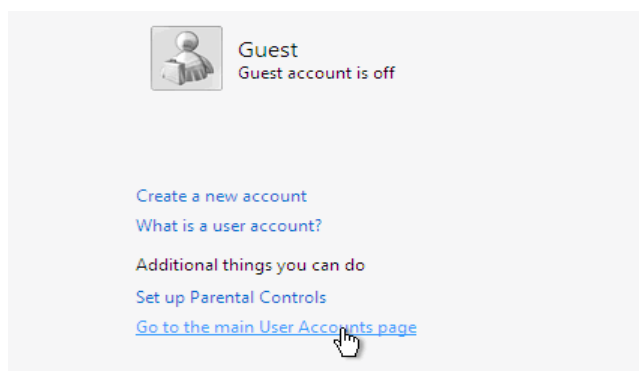
- Insert the USB dongle.
- Use the icon on the desktop to lunch the application.
- Or use the shortcut present in the start menu.

6 Disable UAC using Control Panel (only on Windows Vista and Windows 7)

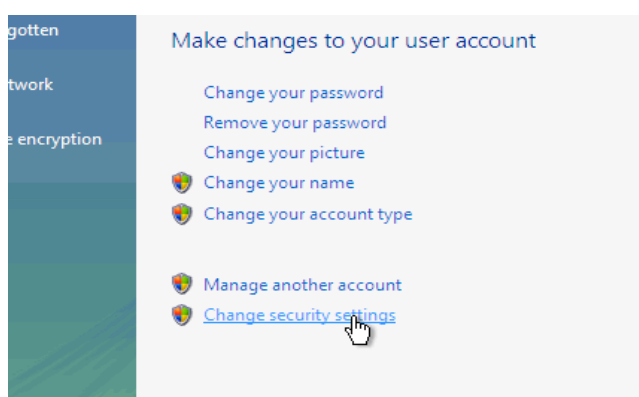
- Open Control Panel.
- Under User Account and Family settings click on the "Add or remove user account".



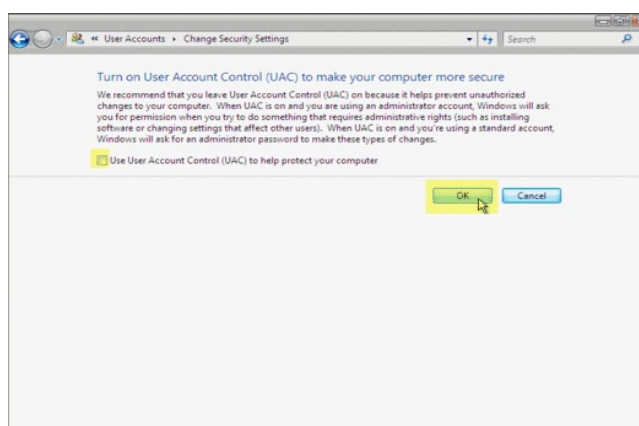
- Click on one of the user accounts, for example you can use the Guest account.
- Under the user account click on the "Go to the main User Account page" link.



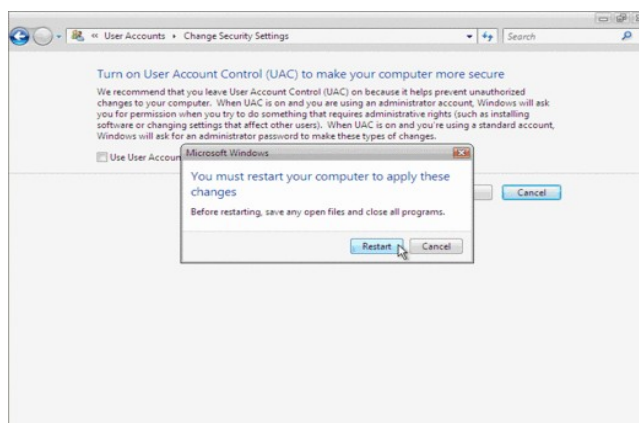
- Under "Make changes to your user account" click on the "Change security settings" link.



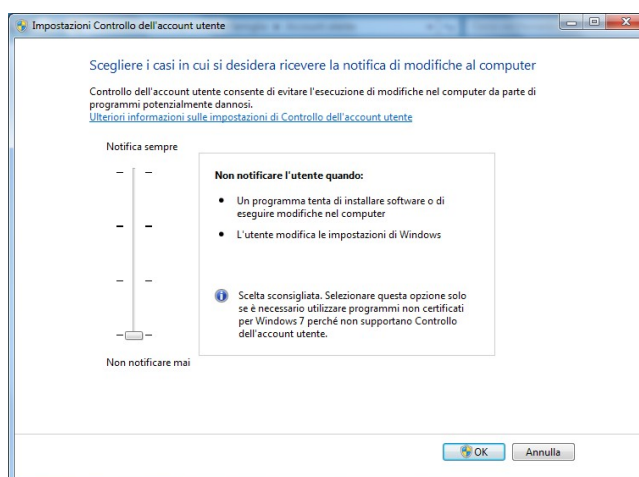
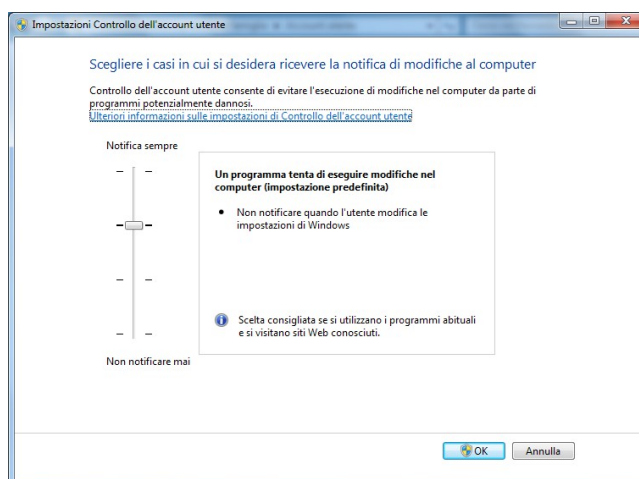
- In case of Windows Vista:
- In the "Turn on User Account Control (UAC) to make your computer more secure" click to unselect the "Use User Account Control (UAC) to help protect your computer". Click on the Ok button.



- You will be prompted to reboot your computer. Do so when ready.



- In case of windows 7:
 - A slider control appear in a new window, then move the cursor to the bottom. Click on the Ok button and reboot.



- When rebooted it can be run every application (like a setup) without unwanted interferences from Windows.
- In order to re-enable UAC just restore the previous setting and reboot.

7 References

Scientific bases of our algorithms:

- Rix, G.J. and Lai, C.G.
Model-Based Uncertainty in Surface Wave Inversion
Proceedings, GeoCongress 2006, "Geotechnical Engineering in the Information Technology Age", Atlanta, February 26-March 1, 2006. Paper Reference No. 11904.
- Lai C.G., Wilmanski K. (Editors)
Surface Waves in Geomechanics: Direct and Inverse Modeling for Soils and Rocks, CISM Lecture Notes No. 481, CISM-Springer Verlag, pp. 385, ISBN: 3-211-27740-4. CD with software programs for surface wave analysis is included.
- Lai, C.G.
"Chapter 3 – Surface Waves in Dissipative Media: Forward and Inverse Modelling" in *Surface Waves in Geomechanics: Direct and Inverse Modeling for Soils and Rocks*. Edited by C.G. Lai and K. Wilmanski, CISM Lecture Notes Vol. No. 481, Springer-Verlag, pp. 385, October 2005. ISBN: 3-211-27740-4. CD with software programs for surface wave analysis is included.
- Rix, G.J.
"Chapter 3 – Near-Surface Site Characterization Using Surface Waves" in *Surface Waves in Geomechanics: Direct and Inverse Modeling for Soils and Rocks*. Edited by C.G. Lai and K. Wilmanski, CISM Lecture Notes Vol. No. 481, Springer-Verlag, pp. 385, October 2005. ISBN: 3-211-27740-4. CD with software programs for surface wave analysis is included.
- Lai, C.G., Foti, S., Rix, G.J.
Propagation of Data Uncertainty in Surface Wave Inversion
Journal of Environmental and Engineering Geophysics, 10(2), pp. 219-228, July 2005.
- Lai, C.G., Rix, G.J., Foti, S., Roma, V.
Simultaneous Measurement and Inversion of Surface Wave Dispersion and Attenuation Curves
Soil Dynamics and Earthquake Engineering, Vol. 22, No. 9-12, pp. 923-930, October-December 2002.
- Rix, G.J., Lai, C.G., Spang, A.W.
In Situ Measurements of Damping Ratio Using Surface Waves
Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 126, No.5, pp. 472-480, May 2000.
- Lai, C.G., Foti, S., Godio, A., Rix, G.J., Sambuelli, L., Socco, V.
Geotechnical Site Characterization Using Geophysical Techniques
Italian Geotechnical Journal, RIG, Special Publication, No.3, pp. 99-118, September 2000, Specialty Panel of 20th Italian National Conference on

Geotechnics, Parma, Italy, September 22-25, 1999 (in Italian).

- **Lai, C.G.**
Spectral Analysis of Surface Waves – Active Methods – Technical Recommendations
Italian Geotechnical Journal, RIG, No.4, pp. 201-212. December 2000.
- Lai, C.G., Rix, G.J.
Inversion of Multi-Mode Effective Dispersion Curves
Proceedings, 2nd International Symposium on Pre-Failure Deformation Characteristics of Geomaterials, IS Torino 99, Torino, Italy, September 26-29, 1999, Vol. I, pp. 411-418.
- Lai, C.G., Rix, G.J.
Simultaneous Inversion of Rayleigh Phase Velocity and Attenuation for Near-Surface Site Characterization
Contract Report prepared for the National Science Foundation under Grant No. CMS-9402358, and the U.S. Geological Survey, Department of Interior, Award No. 1434-95-G-2634, Report No. GIT-CEE/GEO-98-2, July, 1998, pp. 258.
- Strobbia, C.
Surface wave methods: acquisition, processing and inversion,
Ph.D. Thesis, Politecnico di Torino, Italy, 2003.