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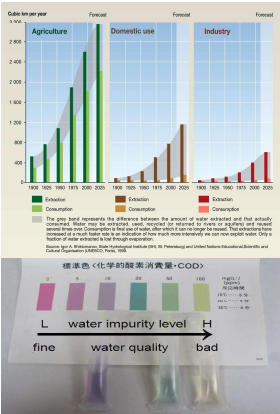
A method for on-site analysis of water quality based on simplified test

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Introduction

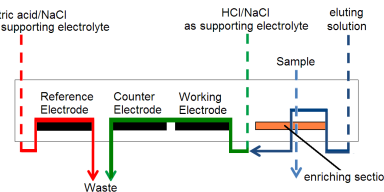
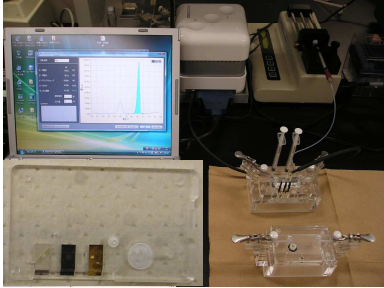
Along with the rapid growth of population and economics, and dramatically increase in water demand by industry, agriculture and domestic use causes the risk of water resources through increased demand and pollution. To understand the characteristics of water quality in land water, it is necessary to know the various physical and chemical parameters. In this study, we report the collecting method of the sample and data for analysis of water quality using the ion selective pack test, the multiple water quality checkers and electrochemical analysis.



Electrochemical analysis for detecting metal ions

The characteristic of a electrochemical analysis is to provide real-time reliable information about the chemical composition of its surrounding environment.

Applications: on-site metal analysis such as mercury, arsenic, lead.



Gold mining site at River Cikaniki Java, Indonesia.

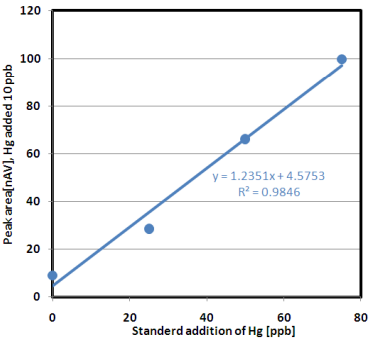
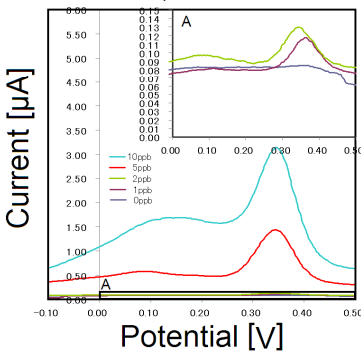


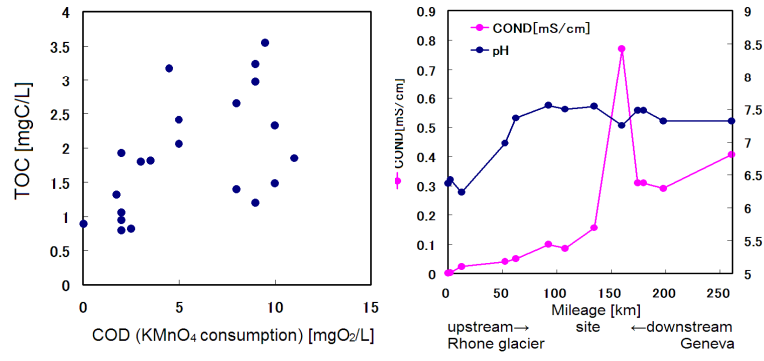
Fig. 10. Standard of addition of Hg [ppb]

Land use and water quality relationships

Analysis of the water quality change using land use indicators [e.g. River Rhone, Switzerland]



Mileage [km]	place	Name	TEMP [°C]	pH	COND [mS/cm]	TDS [mg/L]	TOC [mg/L]	COD(Mn) [mg/L]	NO ₃ [mg/L]	NO ₂ [mg/L]	PO ₄ [mg/L]	SiO ₂ [mg/L]
0	Rhone gletscher	Rhone gletscher	0.77	6.37	0.002	0.002	0.341	0.025	0	0	0.05	0.2
12	Rhone gletscher	Rhone gletscher	0.48	6.43	0.003	0.002	1.311	1.75	0.03	0.3	0.25	0.6
2	Rhone gletscher	Rhone gletscher	7.1	6.23	0.023	0.015	1.051	2	0.06	1.5	0	6
52	River Rhone	Brig	4.41	6.98	0.04	0.026	1.098	2.5	0.002	1	1	3
62	River Rhone	Visp	5.68	7.36	0.051	0.033	2.231	9	0.005	1	2	4
92	River Rhone	Sierre	10.4	7.56	0.1	0.065	3.237	9	0.02	0.25	4	8
107	River Rhone	Sion	7.13	7.5	0.086	0.056	2.061	5	0.015	3	0.5	3
134	River Rhone	Martigny	11.1	7.54	0.156	0.101	1.117	8	0.01	4	0.5	8
159	River Rhone	Aigle	8.86	7.25	0.771	0.493	2.874	9	0.05	3	0.8	3
174	Lake Leman	Montreux	24.2	7.48	0.309	0.201	3.548	9.5	0.1	3	0.2	0
179	Lake Leman	Vevey	24.2	7.48	0.309	0.201	2.327	10	0.06	0.6	0.1	0.5
197	Lake Leman	Lausanne	22.6	7.32	0.291	0.189	2.412	5	0.01	2	0.2	0.3
200	Lake Leman	Geneva	23.2	7.32	0.407	0.271	1.303	4.5	0.02	3	0.2	0



The technical approach for monitoring



To improve the monitoring system and reliability assurance using on site analysis based on simplified test:

- Use a low noxious chemical reagent.
- Reduction of the operation steps or preparations.
- Enhance the educational course for collaborating with citizen and experts who make activities more efficient.

Summary

Simplified on-site analysis are expected to play an increasing role in environmental monitoring. The change of land use, pervious areas and high activity will directly cause a change in water quality. This report surveyed important advances in electrochemical on-site analysis technology, including ion selective pack test, multiple water quality checkers and electrochemical analysis for on-site field testing for water quality and water management. Such devices should allow one to evaluate the measurement of numerous pollutants from the laboratory to the field, and to perform them rapidly, inexpensively, and reliably. With the introduction of education and training for the general public, the sustainable development of water management can be effective to the substantial contribution.

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