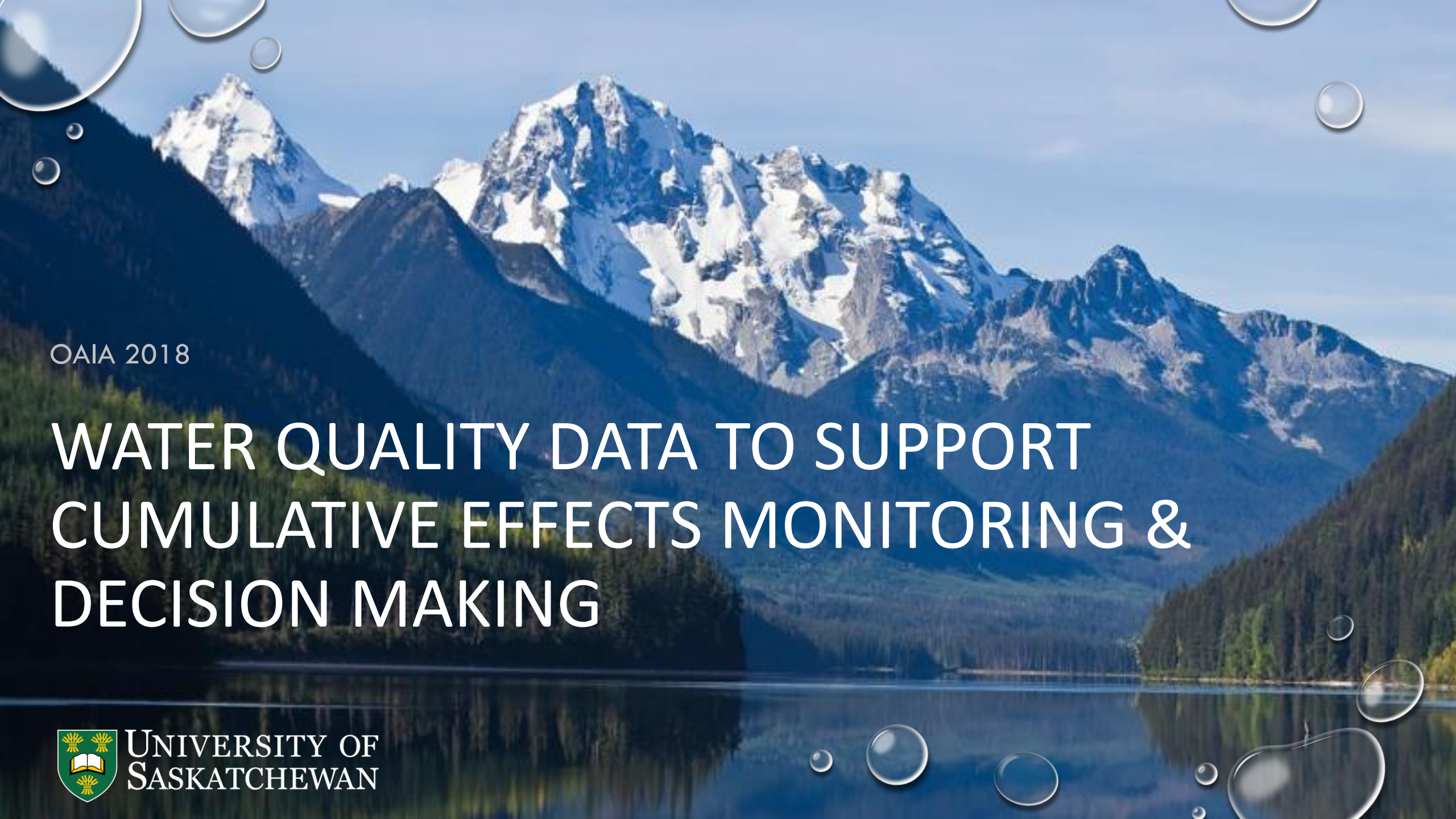


OAIA 2018

WATER QUALITY DATA TO SUPPORT CUMULATIVE EFFECTS MONITORING & DECISION MAKING

University of Saskatchewan

“Environmental monitoring provides the foundation for CE science and informed management; yet monitoring is among the most deficient aspects of CE initiatives and often has limited influence on regulatory decisions.”

CE Monitoring

Monitoring *inside* EA:

- project proponents as per EA licensing & permitting
- ensure project is within allowed limits of stress
- understand cumulative contribution of project actions

Monitoring *outside* EA:

- regional or watershed ‘state-of’ reporting
- performance of parameters in the receiving environment
- EEM programs for understanding cumulative change

CE Monitoring

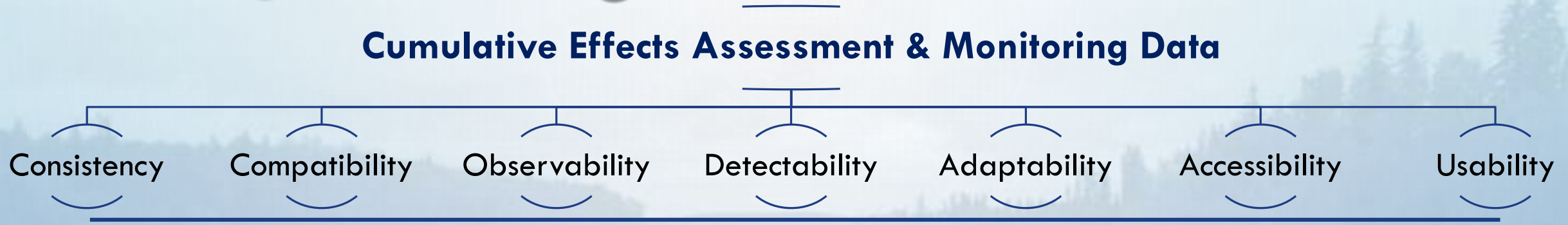
Enduring challenge: design and integration of monitoring programs that advance CE science *AND* meet the day-to-day needs of those tasked with project management & regulatory decision making

- MVRMA – Requirement to consider CE in project EA
- Cumulative Impact Monitoring Program

NWT CIMP Environmental Audits

- extent to which CIMP information informs project CE decisions unclear
- weak connection between EA & CE data

Approach

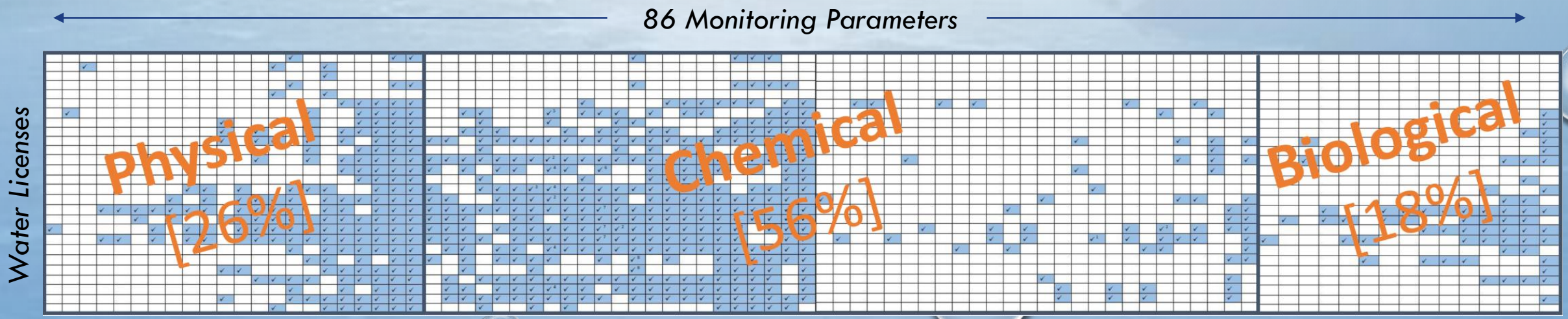


SAMPLE

- 26 ‘Type A’ water licenses (MVLWB) registry (427 monitoring stations)
- Mackenzie DataStream: 4 government monitoring datasets
- Practitioners, regulators, proponents, Land & Water Boards

Highlights

- No parameters common to all water licenses
- ~ 20 % of parameters monitored in only a single water license
- 25% monitored at one or more station in at least 50% of licenses issued
- Only one biological parameter monitored in 50% or more of all water licenses
- Rainbow trout identified in 37% of all licenses; monitored @ only 5% of stations



Highlights

- Greater consistency in ‘categories’ monitored when considering project type, but not in specific monitoring parameters
- Government monitoring networks included same general categories as proponent water licenses, but fewer parameters
- Proponents typically monitored a broader range of parameters…though not always

Example:

- DeBeers Canada Snap Lake mine monitored 63% of 86 parameters
- Dogrib Power Corp. hydro project monitored 1% of 86 parameters

Project Type	Projects	Physical	Major Ions	Metals	Nutrients	Biological	Hydrocarbons
Dam Construction	1	✓		✓		✓	
Hydroelectric Power	4	✓					
Geothermal Power	1	✓	✓	✓			
Municipal Undertaking	6	✓				✓	✓
Oil and Gas	2	✓	✓	✓			✓
Mine or Mine Remediation	13	✓	✓	✓	✓	✓	✓

Highlights

Metadata

- details missing (QA/QC, analytical techniques) to determine usability of data
- timing of monitoring/collection specified for some but not all parameters and stations

Attributes and detection limits

- same activity, same waterbody: different parameters & monitoring design
- same parameters, different attributes (e.g. discharge WQ vs receptor WQ)
- same attributes, variable detection limits across projects & programs

Highlights

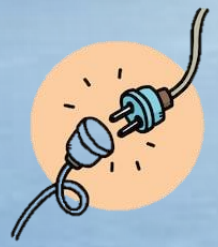
Cumulative effects baselines

- baseline monitoring commences only when project viability is certain
- post-EA monitoring of stressors (compliance) vs effects/ambient condition
- regional monitoring data not specific to meet project CE regulatory needs

Available but inaccessible

- limited knowledge of what government monitoring data does exist
- proponents can fulfill license obligations by providing data in PDF format

Key points

- Growing agenda for regional assessment & monitoring frameworks to support CEAM
- Project-based EA is still the primary regulatory decision point for cumulative effects
- 
  Disconnect between the monitoring ‘inside’ EA, the monitoring ‘outside’ EA, & regulatory decision support needs

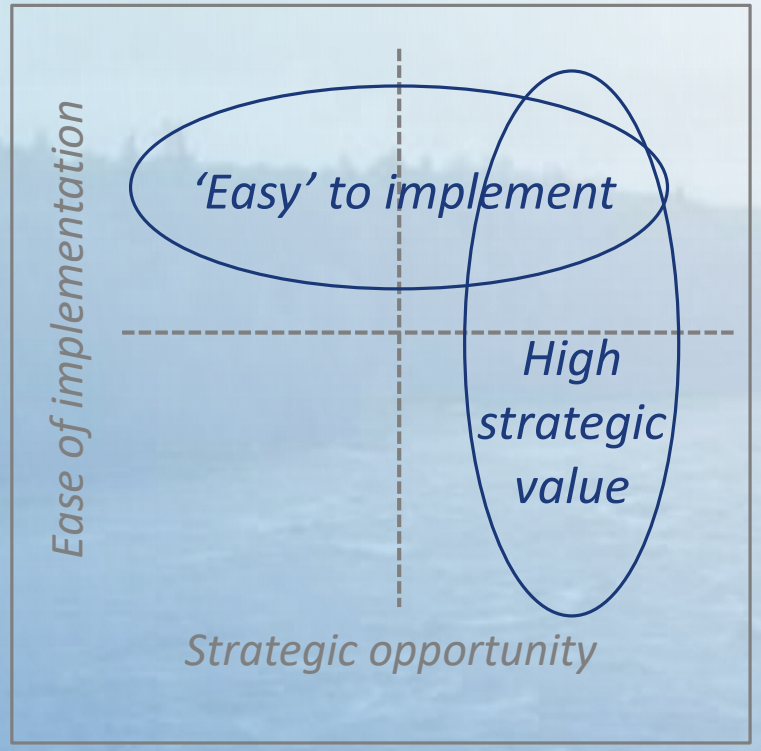
Key issues

!! NWT-CIMP experience is NOT unique !!

Scaling up CE and supporting regulatory EA - some fundamental & enduring challenges

- CE oversight across monitoring programs (EA + EEM)
- Lack of standardization of ToRs to support CE data
- Most ‘useful’ CE indicators?
- Long-term CE science vs. immediate needs of regulatory decision makers
- Clarity on what those CE regulatory decision support needs are

Key opportunities



- Minimum set of priority CE indicators across monitoring programs (stressor / effect)
- Proponents monitoring for parameters not directly linked to their project - unpopular but necessary
- Consistency & coordination of ToRs / licensing requirements re. monitoring across watersheds
- Metadata & data sharing – incentives vs. requirements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Consistency
Compatibility
Observability
Detectability
Adaptability
Accessibility
Usability
University of Saskatchewan